September 1961

Wet processing—A progress report

Can cotton mills grow their own?

What price polypropylene?

4-feed hosiery, pro and con

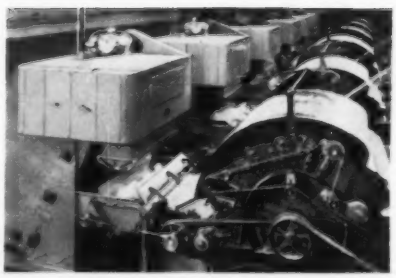
Complete contents on page 4

Textile Industries

a W. R. C. Smith publication formerly "Cotton" fifty cents per copy

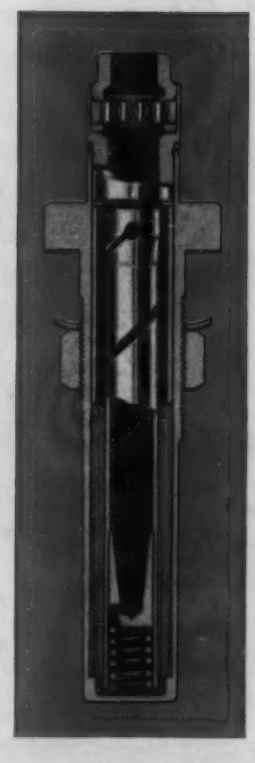
FEED ACCURACY OF ±½ OUNCE!

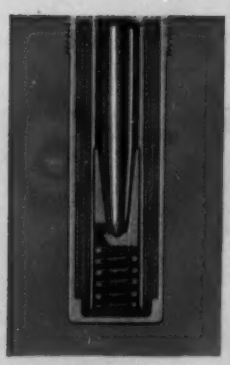
If you are feeding or blending fibers which must be precisely controlled, Hunter Imperial Feeds *consistently* deliver the proportions necessary for highest *quality* with an assured accuracy of ±½ oz. per dump! Variations of 15% to 20% can be reduced to *less than 5%!* Whether your feeding operations are for yarn or web you can be assured of the same dependable performance from the Imperial Feed to give you the necessary evenness for top-quality production. Single dumps from a full hopper down to the last pound are handled with the same accuracy. Yet Hunter Imperial Feeds give you *more* than weighing precision. Sturdily constructed, they offer advanced technical improvements to add years of profit-making service to your operation...from the patented cycle monitor to dynamically balanced combs. In applications such as feeding *cotton or synthetic cards,* metering fibers into a *chemical bath* at a desired rate, *woolen card* feeding, or blending such products as glass insulation and mattress pad *felt,* Imperial Feeds *prove* their unique versatility. Hunter has *specialized* in the development and manufacture of textile machinery for 114 years. Today, dependable Hunter equipment is earning steady profits for many alert mill owners. If you're not one of them, don't you think you should be! For constructive on-the-scene assistance, a Hunter Engineer will call...without obligation. Or, send for Hunter's ***Imperial Feed Bulletin D.***



JAMES HUNTER

James Hunter Machine Co., North Adams, Mass. • James Hunter, Inc., Mauldin, S. C.
Hunter Fiber Machine Co., Los Angeles, Cal. • Members American Textile Machinery Assn.
Machinery for Wet Finishing, Drying, Fiber Processing, Non-Wovens, Garnetting



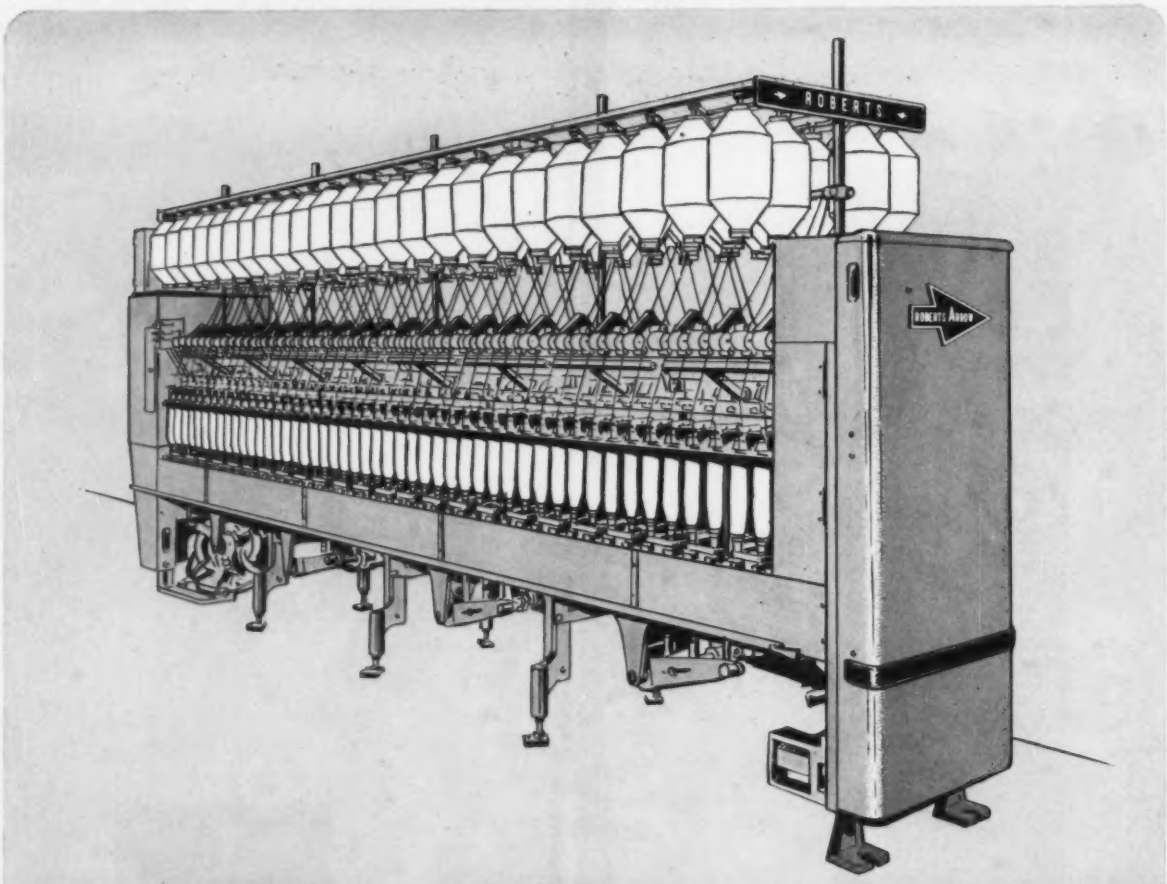


DA42

The Draper DA-4-2 Anti-friction Spindle is designed to run at higher speeds with heavier loads and lengthened oiling cycles. This spindle can be furnished to handle a full range of counts in both filling and warp yarns. The DA-4-2 Spindle features a one-piece steel base and a roller bearing bolster with coil spring dampening action. For the finest in spinning combinations, specify — Draper Bobbins, Rings and Spindles. For information, consult a Draper representative.

DRAPER CORPORATION

OPEDALE, MASS. • ATLANTA, GA. • GREENSBORO, N.C. • SPARTANBURG, S.C.



ROBERTS ARROW

ADVANCED ENGINEERING DESIGN
ATTRACTIVE LOW PRICE
PRACTICAL MILL OPERATION

1200 NEW ROBERTS ARROW Spinning Frames with some 380,000 spindles have been installed in mills since their introduction four years ago; dramatic testimony that Arrow Spinning does the job to mill satisfaction!

RUGGED, ALL BALL BEARING and free of gadgetry and frills, new Arrow Spinning has been refined and streamlined, and engineered for peak performance and dependability. Many technological improvements have been incorporated.

HIGHEST YARN QUALITY! With new FC Drafting cotton system spinning, Arrow Frames consistently spin stronger, more even yarns. Proper fiber control, gripping and weight assure superior yarn quality.

INCREASED SPEEDS! Spindle speeds to 15,000 r.p.m., dynamic balancing of all components, and maximum use of ball bearings provide increased production and economy, with smooth and dependable performance.

WIDER VERSATILITY! Coarse or fine yarns from 2s to 120s count, cotton or synthetics and blends, and a broad range of drafts from 10 to 60 are successfully handled. New Arrow Spinning spins short or long staple cotton, and synthetics from 1 1/16" to 3". Changes in fiber, yarn number, draft, twist and bobbin build are quickly accomplished.

REDUCED CLEANING, MAINTENANCE! Strictly functional, new Arrow Spinning has been engineered for trouble-free operation with reduced cleaning and maintenance. Simplification of components, and fewer parts provide quick, easy cleaning.

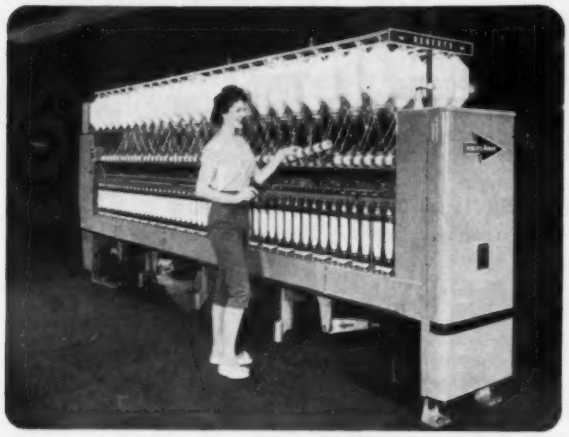
ROBERTS COMPANY
SANFORD, NORTH CAROLINA

For further information use Handy Return Card, Page 173

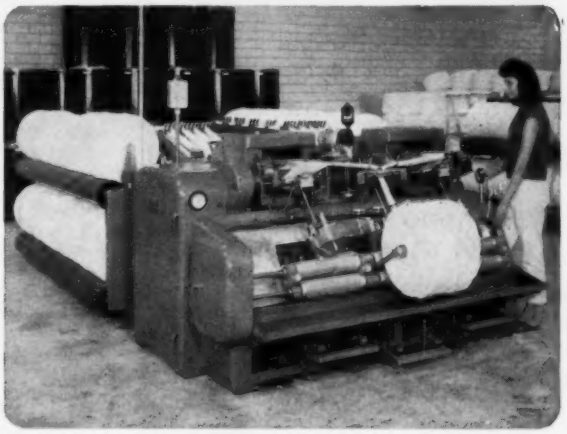
ROBERTS

YARN MAKING MACHINERY

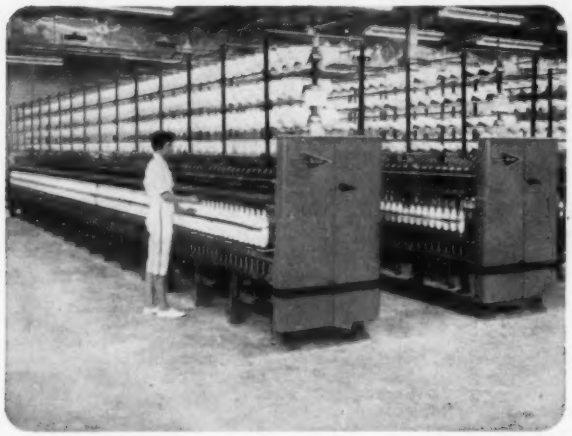
for Cotton, Worsted, or Long Fiber Systems



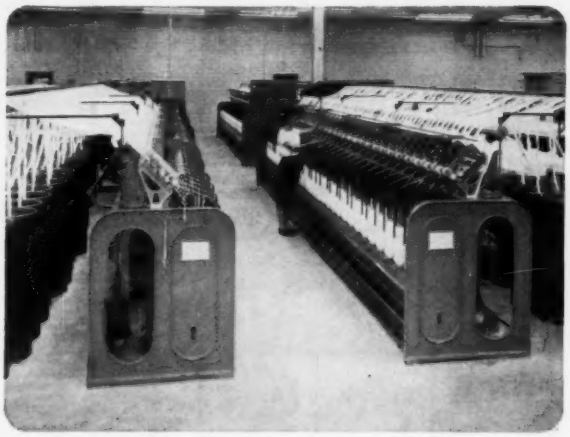
ROBERTS ARROW SPINNING for both cotton system and long fiber system yarn spinning for natural and synthetic fibers and blends. High speed, all ball bearing, big package Arrow Spinning Frames in 25-inch or 36-inch width. Exceptional flexibility and simplicity of operation in the manufacture of improved quality yarns at reduced costs and modest initial investment.



ROBERTS worsted system preparatory machines, including ParaBlenders, ParaDrafters and AutoEveners, are rugged, high performance machines for pinning, parallelizing, drafting and blending worsted and synthetic fibers prior to roving and spinning, and in top making plants. AutoEvener automatically and instantaneously corrects delivered sliver weight to within plus or minus 1%.



ROBERTS TWISTERS for plying yarns are completely ball bearing equipped and designed for high speed ring twisting operations. 25- or 36-inch frames. Up to 3½-inch rings and 12-inch bobbins. Package weights 1¼ pounds on cotton, ¾ to 1 pound on worsted.



ROBERTS ROVING FRAMES are ball bearing rebuilt and feature all-new heavy duty ball bearing Roberts Double Apron Drafting Systems for cotton, short staple or long fiber synthetics, worsted and blends. 10x5 and 12x7 packages. Provisions for double headed spools.

Simplicity of design, rugged construction and high speed ball bearing operation are the trade marks of all Roberts Company machinery. Roberts also supplies rebuilt spinning frames and modernization change-overs for mills' existing machinery.

ROBERTS COMPANY

SANFORD, NORTH CAROLINA

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THIS MONTH'S COVER

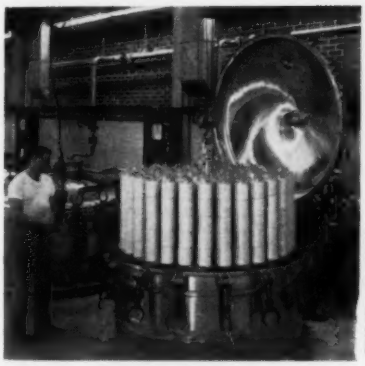


PHOTO BY CLOTHE

Exhaust dyeing with fiber reactives is one of the topics covered in TI's special progress report on wet processing. Article begins on page 70.

IN TI NEXT MONTH

Nonwovens

■ THE RAPID growth of nonwoven fabrics has been accompanied by a great deal of confusion about their net effect on the textile industry. What has happened when they entered "conventional" textile markets has been well publicized—and exaggerated.

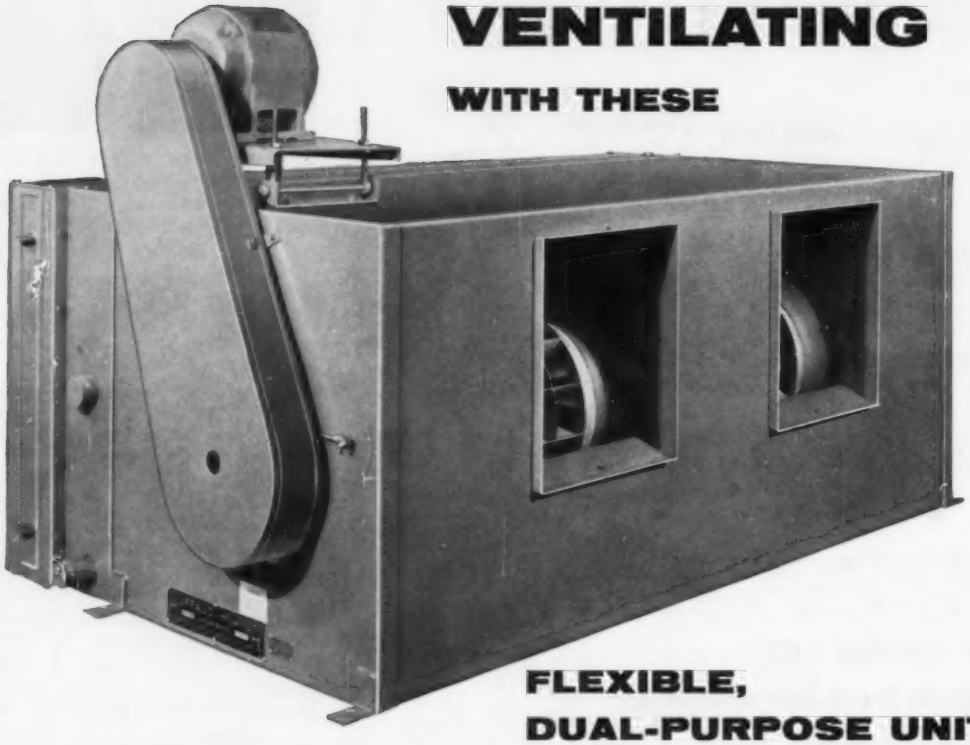
Starting in October, TEXTILE INDUSTRIES will present a series of articles on nonwovens. Its purpose will be to give a clear and concise picture of just what the "nonwoven business" actually is. It will define the different types of nonwovens, tell how they are made, how they are used, how they are sold, and the various factors to be considered in a nonwoven operation.

The author of the series is James W. Howden, of James W. Howden Co., Inc., a firm engaged in research, development, and consulting for all phases of the bonded fabrics industry.

And . . .

■ THESE ARE some of the topics that will be covered in the October issue of TEXTILE INDUSTRIES: evaluation of textile selling operations (Article 8 in the series "Modern Textile Management"), setting spinner-doffer job loads, industrial engineering for the finishing plant, details of a way to make accelerated ends-down tests, dyeing wool hosiery, a quick method for the rapid determination of cloth construction, and an analysis of personnel practices in southern spinning and weaving mills.

PLAN YOUR HEATING AND VENTILATING WITH THESE



FLEXIBLE, DUAL-PURPOSE UNITS

BUFFALO Model G HEATING and VENTILATING UNITS are available for heating and ventilating or ventilating only. In cold climates, they deliver the heat you need, where you need it — plus ventilation. In hot areas, they circulate cooling, refreshing air.

And *Buffalo* Units offer you these *extra* advantages:

Sectionalized Cabinet — easy to assemble, easy to install and easy to service — includes fan section, coil and base section of welded heavy gauge construction. Available with ½" spray-coated fiberglass insulation inside.

High-Performance Fans — streamlined housings, oversize hollow shafts and mixed flow wheels for stability and efficient distribution at low velocities.

Efficient heating coils — Aerofin Type BNF non-freeze for steam heating to 200 psig and 400°F.; Type H for hot water heating.

Choose any combination — Type HV for horizontal or vertical operation, both heating and ventilating; Type V for ventilating only; choice of filter boxes, mixing boxes, dampers; 45° or 90° outlet elbows, swivel or stationary.

Write for Bulletin UH-130 and select the models that will handle both your heating and ventilation needs at once!

"Buffalo"

BUFFALO FORGE COMPANY

BUFFALO, NEW YORK

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

Buffalo air handling equipment to move, heat, cool, dehumidify and clean air and other gases.

Buffalo Machine Tools to drill, punch, shear, bend, slit, notch and cope for production or plant maintenance.

Buffalo Centrifugal Pumps to handle most liquids and slurries under a variety of conditions.

Sprout machinery to process sugar cane, coffee and rice. Special processing machinery for chemicals.

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GOODYEAR

Back of the best carpet—Goodyear Latex

Reason One: Latex-based carpet backings have passed all tests. In thousands of homes, they've proved themselves on all these counts: Top binding strength, lasting flexibility, excellent body, full dimensional stability plus outstanding resistance to age, cleaning compounds, wrinkling, raveling and snagging.

Reason Two: The high quality and versatility of Goodyear latices. By compounding with various PLIOLITE (styrene/butadiene) latices, or with CHEMIGUM (nitrile) and PLIOVIC (vinyl) latices in various proportions, the optimum in general or particular properties can be achieved—easily and economically.

Reason Three: Your local compounder aided by Goodyear technical and production experts. Together, they can supply just what you want, at a minimum of concern and cost on your part. For the best in backings, see your local compounder or write Goodyear, Chemical Division, Dept. I-9439 Akron 16, Ohio.

Lots of good things come from

GOODYEAR

CHEMICAL DIVISION

Chemigum, Pliolite, Pliovic—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

What's going to be good for you...for 1962?

New Wovens are going to make news. They'll be of 100% Celanese fibers, or in blends and combinations with the newer high-performing rayons such as Avron, Avril, Avlin, Corval, Zantrel, etc.

Long-Time Favorites will be in even bigger favor . . . batistes, voiles, sheers, poplins, sharkskins, tropicals, cords, crepes, linen-types, seersuckers, shantungs and chambrays. In plain and novelty weaves and patterns in a wide range of colors, weights and finishes. The traditional broadcloths, piques, plaids, checks, flannels, failles, denim-types, taffetas, etc. in even greater volume than previous years.

Knits will continue to be sensational, in the whole range of weights and textures. Glamour knits, including novelty and metallic versions, have great potential.

Get them in production for 1962. They're going to be what leading converters, manufacturers and consumers ask for. They're going to be promoted in depth, bought and sold in volume.

They're going to be good . . . for *you.*

And they'll be even better made with Celanese contemporary fibers: *Celanese acetate*, the beauty fiber; *Arnel triacetate*, the ease-of-care fiber; *Celaperm acetate*, the fiber with "sealed-in" color; *Fortrel polyester*, the fiber that keeps its promise!

Celanese Fibers Company, 522 Fifth Avenue, New York 36 (a division of Celanese Corporation of America) Celanese® Arnel® Celaperm® Fortrel® is a trademark of Fiber Industries, Inc.

Celanese contemporary fibers

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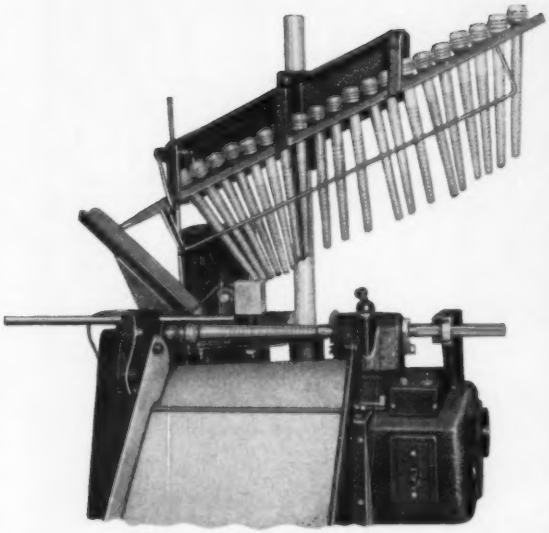
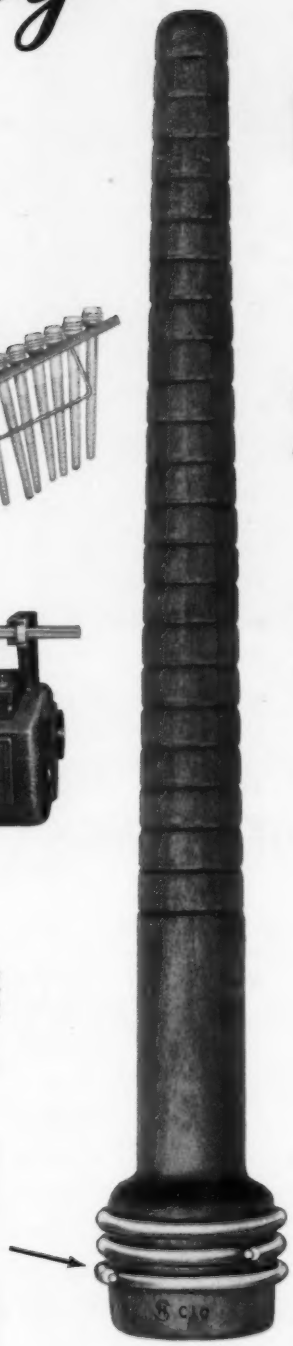
Quality LOOM BOBBINS by Stehedco



SUPER ACCURATE
STEHEDCO ELECTRONIC TESTER

Stehedco Bobbins are tested for runout before shipment on the Super-Accurate Stehedco Electronic Tester. This machine is now available for sales. Ask our Representative about it.



NoMigrate — To prevent Ring Migration. Exclusive with Stehedco.

You get Improved Performance and Reduced Cost with STEHEDCO Bobbins because of

- Extensive Research
- Superior Design
- Quality Control
- Rigid Inspection

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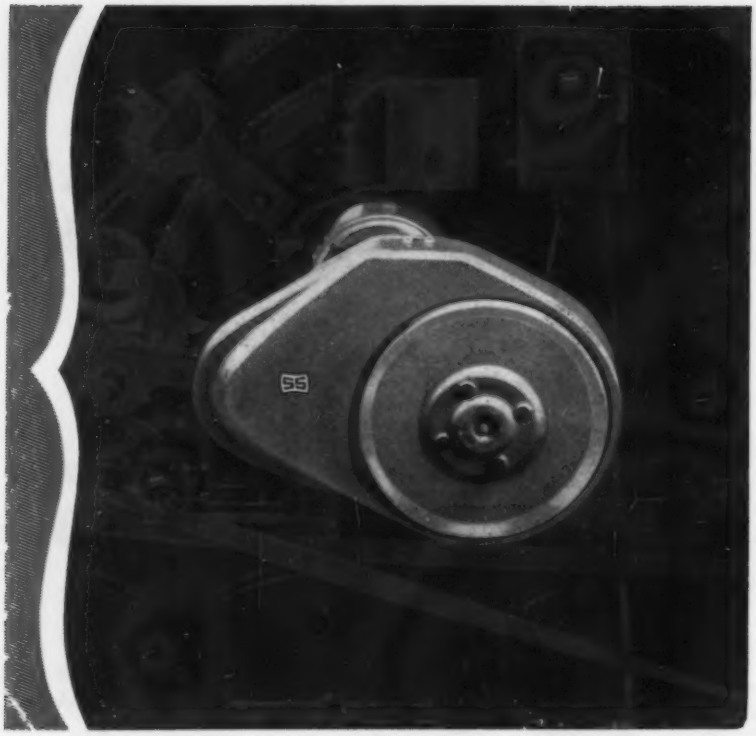


SOUTHERN STATES CD-2 CARD DRIVE COMBINES INTO ONE UNIT ALL OF THE FEATURES WANTED FOR COTTON CARDS

Here is why we honestly believe the Southern States CD-2 Card Drive is the safest, simplest, most efficient individual drive on the market today:

Finger-tip control. No changes in operating procedure. Unit is controlled by simple clutch lever in both starting and hand stripping.

Full speed in seconds. A 1½ hp high torque card motor brings card into full operation, seconds after clutch is engaged.

Safety engineered. All belts and moving parts are covered. Starting and idling is accomplished by simple clutch lever.

Rugged construction. The entire unit is built for heavy-duty service: steel main stand; cast iron jackshaft bracket and main pulley; cast aluminum cover. Ball bearing throughout.

Easy installation. Fits any cotton card. Minimum number of holes to drill in frame. Drive pulley, collar and clutch are preassembled and slip on to shaft using existing keyway.

Get the facts from your Southern States representative or write for Bulletin 301-a.

SOUTHERN STATES
EQUIPMENT CORP.
HAMPTON, GEORGIA

SHORTS & REMNANTS

TI Gets Birch-Switched

"I am a textile executive and a member of the John Birch Society. . .

" . . . I take exception to . . . article in your July issue with reference to the John Birch Society. . .

" . . . cancel all future issues of your fine textile trade magazine to our company except one copy. . . "

WM. B. PITTS
Treasurer
Hermitage Cotton Mills
Camden, S. C.

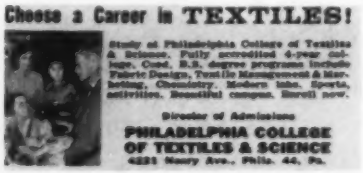
Import Price Floor

When we printed (TI for August, page 16) **Walter Mitchell's** plan for fighting textile imports by requiring that they be sold at no less than the price of comparable U.S. products, we didn't realize that at least one textile-producing country already had such a plan in effect.

It seems that Switzerland has just put in force regulations which provide that the import price of Japanese cotton goods, after customs and transport duties, must not be more than 10% below comparable Swiss products. The margin is 12% for woolens, and 20% for other textiles.

Maybe we have something here!

► This is an ad we noticed in the July issue of *Seventeen* magazine.


Choose a Career in TEXTILES!
Study at Philadelphia College of Textiles & Science. Fully accredited 4-year college. Coed. B.S. degree programs include Fabric Design, Textile Management & Marketing, Chemistry, Modern labs. Sports, activities. Beautiful campus. Enroll now.
Director of Admissions
PHILADELPHIA COLLEGE OF TEXTILES & SCIENCE
4231 Henry Ave., Phila. 44, Pa.

First time we can remember seeing an ad for a textile school in a consumer magazine. And a good idea, too.

Heavy, Heavy

In a recent issue of *TI News*, our semimonthly sister publication, there was a classified ad for "Heavy Chemical Salesman . . . top representative out of Charlotte . . " In due course we received the following letter:

For further information use Handy Return Card, Page 173

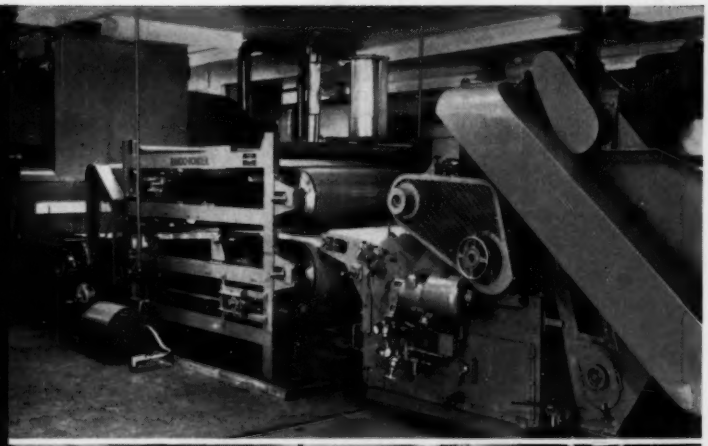
FIBER TO FABRIC

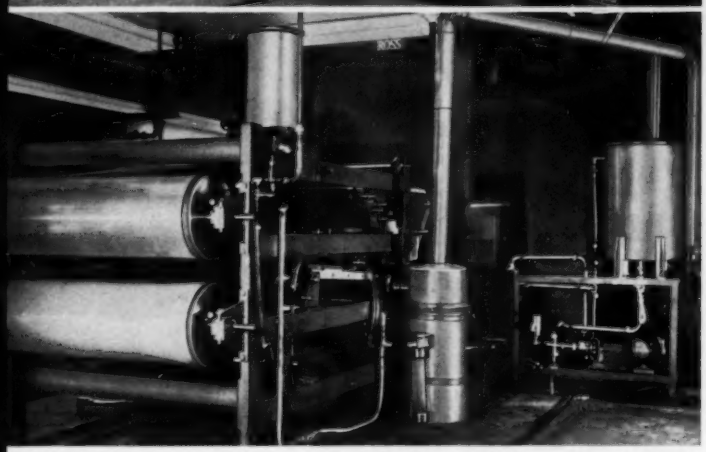
FIBER TO FABRIC IN ONE CONTINUOUS PROCESS

•

the

RANDO-WEB® PROCESS





40" RANDO-WEB process line with RANDO-FEEDER, Model B RANDO-WEBBER, RANDO-BONDER, Variable Speed Vacuum Extraction System and Compact Chemical Feed System (stainless steel).

Installation photographs courtesy of Celanese Corporation.

The RANDO-FEEDER® and RANDO-WEBBER® produce uniform random oriented web structures with even selvages from a wide variety of textile and non-textile fibrous materials. In continuous production the web flows from the RANDO-WEBBER into the RANDO-BONDER®. This machine provides the means of applying a wide range of chemical binders to web structures without distortion of fiber lay. Screens are adjustable for major changes in web thickness. Chemical pickup is controlled by means of Variable Speed Vacuum Extraction System.

The Chemical Feed System, operating in conjunction with the RANDO-BONDER, feeds binder fluids at constant rate, recycling the returned fluid continuously to maintain constant, uniform chemical concentration. System is made of stainless steel. From fiber to fabric takes only minutes with the RANDO-WEB process... the preferred method for quality nonwoven fabric manufacture.

TEXTILE DIVISION

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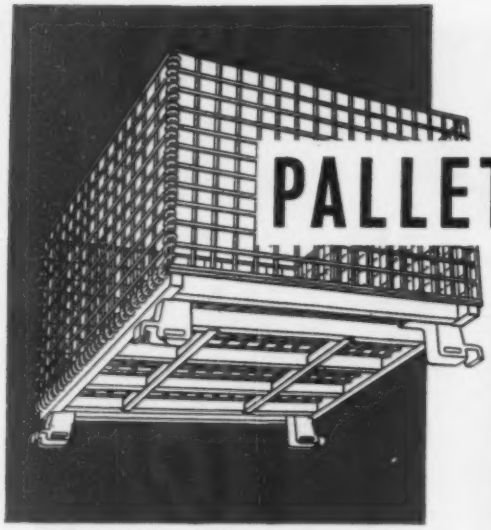


USP PALLETAINERS®

engineered containers for the..

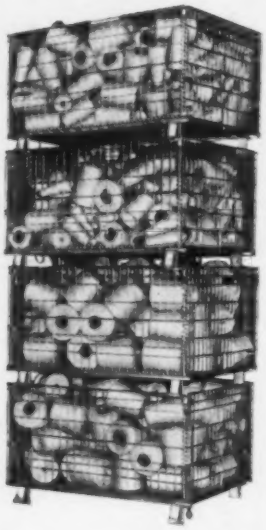
TEXTILE INDUSTRY

USP Palletainers are readily available in a broad range of standardized sizes and types to meet practically every Textile Industry requirement or application.

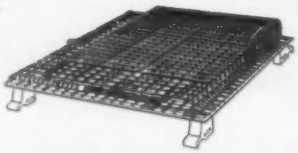
And, Textile Palletainers offer the obvious advantages of modern container, unit handling methods, the safety of sturdy steel wire mesh under standard or special protective finishes—plus the ease and simplicity of space-saving storage and rapid movement of unitized loads—more economically.

Already . . . Palletainers have revolutionized former handling methods for in-work storage of cones, spools, spindles, quiller bobins—even delicate yarns in processing phases.

Why wait? Simply phone, wire or write today and you can try Palletainers in your own plant—and see for yourself how they streamline processing, storage, interplant transport and shipment.



Textile Palletainers offer safer, higher stacking. Save more valuable floor space. Contents always visible.



Palletainers "Flat-Fold" features save storage space—lowers return freight costs.

Palletainers with gates offer complete content accessibility even when stacked. Stacking saves valuable floor space.

Delicate yarns in plastic covers in Palletainers may be stored indefinitely—always visible, accessible, safe and clean. A wide range of Palletainer snap-in liners are available.

SPECIAL OFFER

You may try USP Palletainers right in your own plant on a 10-day master-billing basis. Your obligation is freight only.

USP UNION STEEL PRODUCTS CO.
Albion, Michigan

SHORTS & REMNANTS

"MESSIEURS:

"You want heavy chemical salesman? How many pounds him should weigh? Me and my brotheur come from big family. We chop wood and mine coal in Canada. My brotheur he weigh 230 pounds and I weigh 240.

"If you want bot of us OK. If not get somebody else. We mine coal next year and stay in Canada and raise big family. And to hell with Charlotte.

"GASTON AND ROBERT"

► Don't call us—we'll call you.

Hallowed Ground

The gentleman pictured below is Evan Park Howell, Captain, Artillery, C.S.A.:

Capt. Howell is of particular interest to TI, since on the spot where our new building stands at 1760 Peachtree Rd., N.W., in Atlanta, his Georgia battery of artillery on July 20, 1864, supported Hardee's assault on the Union 4th Corps line, just beyond the road to Collier's Mill. Incidentally, Peachtree Road was at that time called Buckhead Road.

After the unpleasantness was over, Capt. Howell went on to become Mayor of Atlanta, and editor and publisher of the *Atlanta Constitution*. He died in 1905, at the age of 66.

Ask Mr. Goldberg

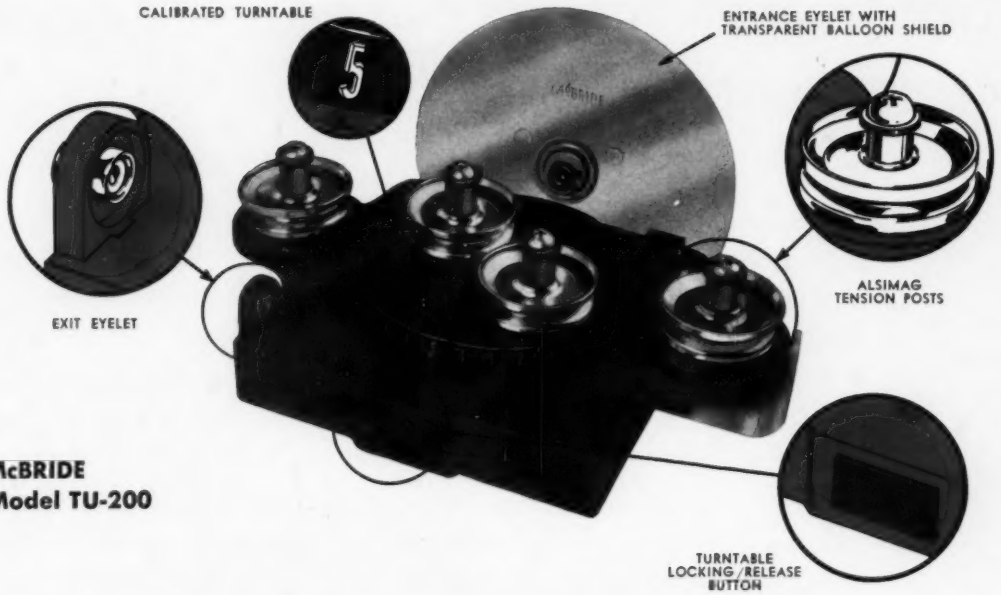
If you'd like further information on any of the items appearing in **J. B. Goldberg's** monthly column, "Recent Technical and Commercial Developments," just drop him a line, care of TEXTILE INDUSTRIES. He'll be glad to oblige. Here are some who wrote recently:

Fred E. Royal, mgr. towel div., West Point Mfg. Co., Fairfax, Ala.; **Milton Solomon,** pres., American

Continued on page 36

The McBRIDE 'Monitor'

CREEL TENSION DEVICE...



McBRIDE
Model TU-200

THE McBRIDE "MONITOR" creel tension is the ultimate in disc and post type tension devices. It combines maximum tension adjustment with rugged construction to give dependable results and trouble free operation.

The unit has two center tension posts mounted on a turntable which is calibrated into 8 selective positions and which may be adjusted thru a maximum range of 180°. By changing the turntable setting, 8 different angles of yarn wrap are obtainable, thus producing 8 different levels of output tension.

Provision has been made for the addition of one or two more tension posts by supplying two mounting positions just outside the periphery of the turntable and at 180° extremes.

Low magnitude tension adjustment is accomplished by pressing the release button located in the front center of the base. This frees the normally locked turntable which may then be rotated to obtain the desired amount of tension in the yarn. Substantial increase in tension may be obtained by the use of heavier tension discs, adding tension posts, or a combination of both.

Threading of the 'Monitor' tension is simplified by use of a transparent balloon shield at the entrance eyelet. Also, a black turntable gives better visual contrast and the finest of yarns show up more clearly to the operator.

The unit is available with two, three or four tension posts, and tension discs in weights and finishes to suit the application. For very heavy yarns, the device may be equipped with larger entrance and exit eyelets in alsimag, titanium or porcelain.

EDWARD J. McBRIDE CO., Inc. | COTTMAN AVENUE & WISSINOMING STREET
PHILADELPHIA 35, PENNSYLVANIA

J. Mason Rowland, Overseer of Spinning at Joanna Cotton Mills, Division of Joanna Western Mills Co., Joanna, South Carolina, and Armstrong representative, Paul Rosser, check yarn uniformity at this spinning frame. Accotex NO-764 cots are used on front and back lines; Aprons are NO-7075.

Accotex cots and aprons can help you keep yarn quality high

The quality of your yarn — its smoothness, uniformity, strength — is controlled in large measure by the performance of your spinning cots and aprons. That's true no matter what type of fiber or blend you're spinning, and no matter what type equipment you're using.

The Accotex line of cots and aprons includes compounds that are engineered to help you maintain quality and minimize such difficulties as uneven yarn, excessive lapping, and eyebrowing.

For dependable suggestions on selection or performance of roll coverings and aprons, many mill men rely on their Armstrong representative. Here, for example, you see T. Paul Rosser working with personnel of the Joanna Cotton Mills, Division of Joanna Western Mills Co., Joanna, South Carolina.

Be sure to call *your* Armstrong man on any roll covering or apron problem. Armstrong Cork Company, 6409 Ivy St., Lancaster, Pa.

ACCOTEX® IS A TRADE-MARK OF ARMSTRONG CORK COMPANY

Left: David R. Meyers, Asst. Superintendent of Carding and Spinning, chats with Rosser about comber performance. The detaching rolls on this comber are covered with Accotex NO-728 and the draw box rolls with J-490 covers. Right: Gainvill Dozier, Roll Shop Foreman, operates this Armstrong Type "J" buffing machine, while Rosser looks on.

For further information use Handy Return Card, Page 173

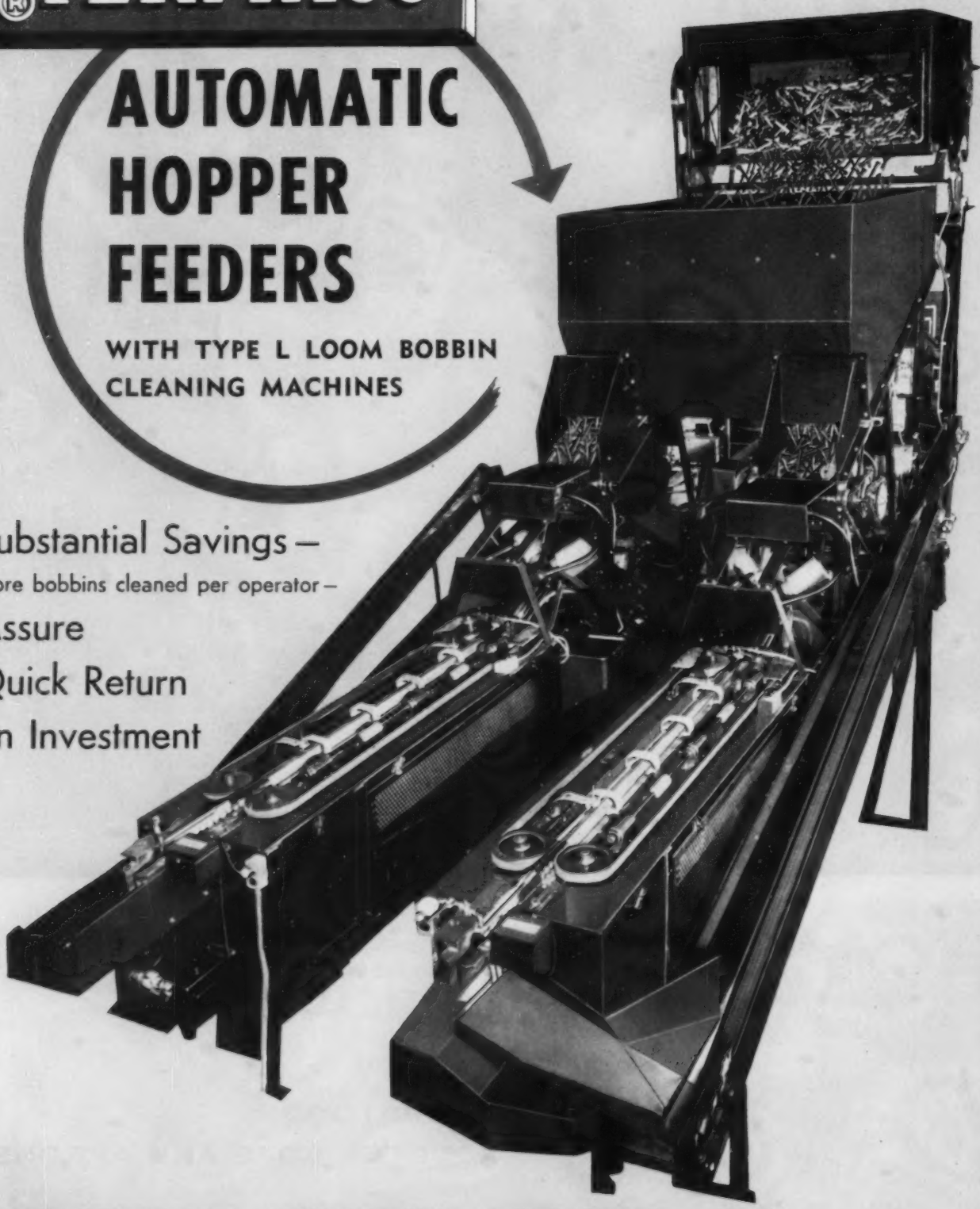
Walter E. Byars (left), Purchasing Agent, and Joseph L. Delany, Superintendent, look over Accotex textile products catalog with Paul Rosser.

Armstrong
ACCOTEX COTS AND APRONS

®TERMACO

AUTOMATIC HOPPER FEEDERS

WITH TYPE L LOOM BOBBIN CLEANING MACHINES



Substantial Savings –
more bobbins cleaned per operator –
Assure
Quick Return
on Investment

THE TERRELL MACHINE COMPANY, INC.

P. O. BOX 928, CHARLOTTE, NORTH CAROLINA

NEWS IN BRIEF

Mill Spending Forecast. American textile mills will have spent about $490 million on new plants and equipment by the end of this year the Office of Business Economics, U.S. Department of Commerce, predicts. This will be down somewhat from last year's total ($530 million), but considerably better than in 1959 ($410 million).

Social Security Rate Goes Up. The new provisions of the Social Security bill signed by President Kennedy are expected to be financed by a hike in the amounts withheld from employees' pay and matched by employers. Both will go to 3⅛% on the first $4,800 of annual income, effective January 1, 1962—a year earlier than originally scheduled.

Silver Import Lining. If imports of U.S. textiles are limited to 6% of domestic production, it could have this beneficial effect on the U.S. industry: Concede this 6% to imports, and raise prices back to a level consistent with the domestic competitive level. In addition, according to the *Value Line Investment Survey,* foreign producers might also be inclined to raise their prices if they knew that only so much of the market could be garnered anyway. A couple of problems: the antitrust laws and the matter of policing.

Imported Picker Laps Hit. F. H. Heidelberg, executive vice-president of the N. C. State Cotton Promotion Association, has written to Secretary of Agriculture Orville Freeman asking that he urge President Kennedy to issue a stop order on the importation of cotton processed just barely enough to remove it from the "raw cotton" category, thereby allowing it to come into the country duty free. "The unfairness of this practice is aggravated by the fact that some of the cotton being processed, in evasion of the intent of existing law, is American-grown cotton imported in picker lap form after being exported with a current subsidy of 6 cents a pound. If allowed to continue, this practice will wreck the cotton program for 1961 and subsequent years," he said.

Knitting Show Biggest Yet. The International Knitting Machinery Exhibition to be held at Belle Vue, Manchester, England, on October 11-21, is expected to be the biggest ever held in its field. Devoted entirely to the machinery, accessories, and auxiliary equipment used in knitting, it will have 250 exhibitors (more than half of whom are from outside the United Kingdom) occupying about 100,000 sq ft of booth space, and it is predicted that the six-thousand-a-day attendance of the last Exhibition will be exceeded.

Cotton Subsidy Up. Effective August 1, the differential between domestic and foreign prices for American-grown upland cotton jumped from 6 to 8½ cents per pound, or $42.50 per bale. The differential is paid by the U. S. government to encourage foreign purchases of government-supported cotton, which is unable to compete at world prices. Commenting on the increased subsidy, L. G. Hardman, Jr., president of Harmony Grove Mills, Inc., and chairman of the Cotton Committee of the American Cotton Manufacturers Institute, said, "American plants will find themselves at an even greater disadvantage in direct competition with low-wage foreign goods because of the $42.50 per bale price differential."

Failures Soar. Business failures in the textile mill products group rose substantially in the first half of 1961, compared with the similar period of last year, both in number (57 in 1961, 39 in 1960) and in liabilities ($9.0 million in 1961, $3.7 million in 1960). according to the Credit Clearing House of Dun & Bradstreet, Inc.

British Censure Us. Six members of the House of Commons have introduced a motion condemning the U.S. textile industry for trying to pressure the Kennedy administration into restricting trade. The motion asked the British government to warn the United States against dangers "inherent in policies inimical to the over-all need of encouraging the growth of world trade."

Imports Peril Defense. The textile industry's present level of operations and capacity for production is not adequate to meet the nation's needs for textiles and textile products in the event of a national emergency of limited, general, or nuclear dimensions. That's what ten textile, fiber, and apparel associations told the Office of Civil and Defense Mobilization in a 200-page brief which they submitted jointly. Imports of

Feathertouch Drafting Systems* in operation

You will find Ideal Feathertouch Drafting Systems in the finest mills in the Americas – and everywhere they are setting enviable records for tremendous production of the highest quality sliver at low costs.

IDEAL
Feathertouch
750

Ideal pioneered in the development of patented spacing sections, high speed coiler assemblies, individual-roll vacuum suction systems, and the Ideal Compact Creel – and in the application of permanently sealed ball bearings and the electro-magnetic clutch. Shown here is the versatile Ideal 750, America's first two delivery frame – with a consistent operating speed of 750 fpm.

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THE ORIGINATORS OF HIGH SPEED DRAWING

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textiles are the principal cause of this, they said, in asking OCDM to find that the national security is impaired by these imports. In the brief, the associations assert that textile imports displaced a minimum of 100,657 American textile and apparel workers in 1960. The job-loss estimate is based on a study which indicates that 135.37 jobs are displaced by each million dollars of imports in the spinning and weaving category, and 194.18 jobs per million in apparel.

Japanese Didn't Dump. The Treasury Department has rejected the claim of the Rayon Staple Fiber Producers Association that Japan is sending rayon staple to the U.S. at less than fair-value prices.

Halt Unfair Practices—IFCATI. Complaints of commercial practices and manipulations leading to "a distortion of competition in the world's textile markets" were listed in an address to the recent International Textile Conference held in Geneva, by a representative of the International Federation of Cotton and Allied Textile Industries:

1. Dumping.
2. Bonuses on raw materials.
3. Direct export subsidies.
4. Export credit facilities.
5. Tax and duty reimbursements.
6. Nonimposition of taxes and duties.
7. Reimbursement of social charges.
8. Reimbursement of nonlevied taxes.
9. Obstacles to the export of semi manufactures.
10. Multiple exchange rates.
11. Premiums on foreign exchange earnings.
12. State-controlled export trading.
13. Barter trading.

More Japanese Yarn. Japanese cotton yarn production in 1960 was up 16.2 per cent over 1959, total exports jumped 256 per cent, but exports to the United States were down 5.6 per cent, according to the Japan-U.S. Textile Information Service, which bases its figures on reports from the All Japan Cotton Spinners' Association. In any

The Geneva Story

■ A KEYSTONE of President Kennedy's Seven-Point Program for helping the textile industry with its import problems was an international conference of textile-exporting nations. Such a conference—covering cotton goods only—was held in Geneva, Switzerland, in late July under the auspices of the General Agreement on Tariffs and Trade (GATT), with seventeen nations participating and seven others attending as observers.

Although most of them were skeptical of the benefits the conference might have for the American textile industry, a number of U. S. textile men accepted Commerce Secretary Hodges' invitation to attend as "advisers" to the State Department negotiators. An exception was Roger Milliken, president of Deering Milliken, Inc., who declined the invitation, saying, "I do not believe in the conference approach. I do not think that the security of American jobs and indeed the security of America itself should depend upon the ability or willingness of the State Department to negotiate short-term voluntary trade agreements with foreign countries."

Mr. Milliken added, "With many others in our industry, I believe that the United States Congress and not foreign governments should control the destiny of the people who are employed in American industry . . . if this [conference] is the only program that can be attempted, it would be better to abandon the effort now."

The Results. The negotiators reached one important agreement: A participating country whose domestic market is threatened by disruption from imported cotton textiles may require that any other participating country hold its exports in any category at a level not lower than any prevailing for the year ending June 30, 1961. The arrangement is for one year, starting October 1, 1961.

The negotiators also agreed to form a committee to recommend a long-term solution to the cotton import problem; its recommendations are to be submitted to GATT not later than April 30, 1962. The committee is to hold a meeting on October 9, 1961.

It is important to note, however, that the agreements reached by the participating countries are not binding until approved by the respective governments.

The Reactions. Reactions to the proposed cotton agreements can only be described as "mixed." Robert T. Stevens, president of J. P. Stevens

R. T. Stevens

& Co., Inc., who was one of the advisers attending the conference, said, "The outcome of the conference, while by no means solving the overall textile import problem in all fibers, is, in my opinion, a step in the right direction. The type of government administration of the provisions of the agreement will ultimately determine the degree of any success attained by the conference."

Many mill men appeared to be in agreement that administration of the failure. As this was written, it seemed likely that the U.S. Department of Commerce would be the guiding hand (as recommended by mill men), but no formal announcement had been made.

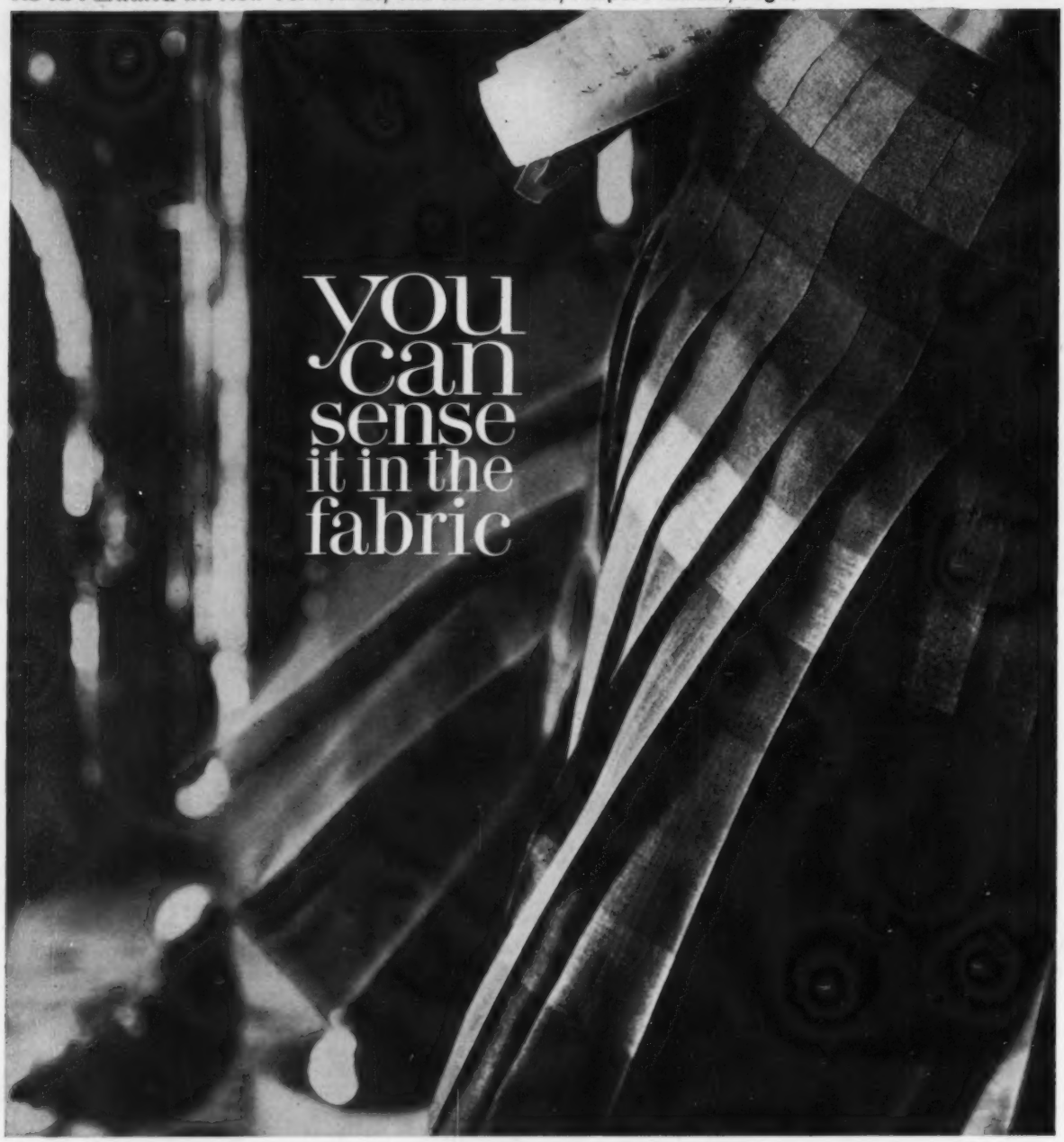
American Cotton Manufacturers Association had this to say: "Although the agreement falls far short of meeting carefully considered industry views regarding . . . the . . . import problem, it is significant in that it recognizes the need for limitations on cotton goods exports to the United States. . .

Mill associations urged that similar agreements be negotiated for wool and the man-made fibers; Northern Textile Association appointed a committee to draw up such a plan for wool textile and apparel manufactures.

Reaction in Japan ranged from cool to hostile. Several associations of Japanese mill men expressed their dissatisfaction, and recommended that their government not sign the agreement. The Japanese foreign minister later announced that Japan would not accept the pact even provisionally unless the U.S. sends a delegation to Japan for further discussions of the quota.

Predictably, Hong Kong's attitude was about the same as Japan's, and England's about the same as the United States'.

AS APPEARING IN: New York Times, The New Yorker, Harper's Bazaar, Vogue



The Vitality of Creslan... the fiber with the six senses of fashion.
Vitality is one of the six senses of fashion. It is animation, verve, endurance...an unquenchable spirit. It can stand up to life, because it is the very breath of life itself. Now, Creslan acrylic fiber is breathing this lasting liveliness into everything from clothes to floor coverings. Creslan sparks fabrics with new color vibrancy, helps wrinkles disappear, keeps fashions fresh and neat with least care. Look for them. You'll enjoy all six senses: vitality, lightness, color, taste, touch, and beauty. American Cyanamid Co., N.Y.

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event, cotton yarn imports from Japan are claimed (by the Japanese) to be negligible.

Foreign Fabric Costs. Widely divergent views have been held about the comparative costs of producing textile fabrics in the U. S. and in exporting countries abroad. In an attempt to clear up some of the confusion, the U. S. department of Commerce commissioned Surveys and Research Corp. to make a study of production costs for eight basic fabrics, in the U.S. and four other countries. The results, based on costs in the first half of 1960, have been published in a booklet, "Comparative Fabric Production Costs in the United States and Four Other Countries," which is available for 40 cents from the Superintendent of Documents, Washington 25, D.C. Although the study has many self-admitted shortcomings, it is undoubtedly the best such analysis currently available. An accompanying table gives some of the results; however, readers are advised to consult the booklet to get a complete picture of the comparisons, since many variables brought out by the authors must be considered to understand the true meaning of the figures.

Fabric Production Costs in the U.S. and Four Other Countries

	U.S.A. Cost $/lin yd	Percentage of U.S.A. Costs: United Kingdom %	Japan %	India %	Italy %
COTTONS, GREY					
Sheeting, 44 x 40	0.146	—	78	77	—
Print cloth, 80 x 80	0.184	—	79	91	—
Broadcloth, 136 x 60	0.262	—	70	—	—
Gingham	0.336	—	66	—	—
WORSTED, FINISHED					
Sharkskin	3.62	91	73	—	—
WOOLENS, FINISHED					
Flannel, higher grade	2.77	90	—	—	—
Flannel, lower grade	1.91	—	—	—	40
MAN-MADE, GREY					
Spun rayon challis	0.219	—	68	—	109

Source: Surveys and Research Corp.

PCTS Grads Do Well. Starting salaries for this year's graduates of the Philadelphia College of Textiles and Science ranged from $4,000 to $7,200 a year, with a mean of $6,000, up an average of $300 from last year.

Wool Promotion Gets Shove. A "multi-million-dollar" wool promotion program will be undertaken in the U.S. by the Coordinating Council for Wool Promotion, an organization made up of wool growers in the U.S., Australia, New Zealand, and South Africa, and representatives of the Boston and Philadelphia Wool trades. The program will include product and market development.

Looms in Place. There were 432,904 looms in place in broad woven fabric mills at the end of 1960, down 1 per cent from a year before, the Bureau of the Census reports. Of these, 416,468 were cotton and man-made fiber looms and 16,436 were woolen and worsted looms.

Labor-Management News

Thumbs Down on Union. Employees at the North Little Rock, Ark., plant of Chicopee Manufacturing Corp. voted 106-38 against representation by the Oil, Chemical and Atomic Workers Union.

Hoffa Looks at Textiles. The textile industry is a prime target of the International Brotherhood of Teamsters, Chauffers, Warehousemen and Helpers, said union president Jimmy Hoffa at the Teamsters' recent Miami convention.

Newly Unionized. Employees at these plants recently became members of Textile Workers Union of America: Darlington Fabrics Corp., Pawtucket, R.I. (by a vote of 135-59); and Easton Tufting Co., Easton, Pa. (without an election).

Raise Dye-Job Loads. Dye house employees in northern New Jersey will have increased job loads as a result of a recent arbitration award. Jig operators' assignments will be increased an estimated 50%, while box work loads will be nearly doubled. The decision handed down by the American Arbitration Association affects about 4,200 workers in 24 plants.

Mills Discriminatory? Several South Carolina mills have been accused by the National Association for the Advancement of Colored People of having discriminatory employment practices. Complaints were filed by NAACP with the President's Committe on Equal Employment Opportunity against these firms: Deering-Milliken Corp., Spartanburg; Reeves Bros., Inc., Spartanburg; Spartan Mills, Inc., Spartanburg; Arkwright Mills, Arkwright; Clifton Mills, Clifton; and Niagara Mills, Spartanburg. The complaint alleges that the mills, which have government textile contracts, hire negroes only as "sweepers, janitors and in other menial positions."

UTWA-Enka Agree. Agreement has been reached between American Enka Corp. and United Textile Workers of America on a new one-year contract for the more than 2,400 hourly rated employees of the company's Enka, N. C., plant. No general changes in wages are provided for in the contract.

Look what Leesona's
done to **LARGE PACKAGE RING TWISTING**

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. . . with the Number 512

They've made it more economical than ever — with cost-cutting operation of the Number 512 *Ring Twister*. Look at these important improvements which give you larger packages of better quality at lower cost: 12-inch traverse . . . Heavy Duty Spindle . . . 3 to 1 builder cam ratio . . . lightweight, smooth traversing ring rail . . . Fast-acting stop motion that reduces knots in the ply and eliminates drop-ply.

Also, consider the reduced maintenance with sealed oilless bearings . . . a full length roller beam that protects against lint . . . and removable, easy-to-clean 7-unit spindle separators. These and still other improvements make the Number 512 the most advanced Ring Twister for all types of yarn. Find out how it can benefit your mill. Contact your nearest Leesona Sales Engineer for the new brochure containing full details, or write LEESONA CORPORATION, Providence 4, Rhode Island.

LEESONA

The Number 512 proves again . . . *Leesona leads . . . to better fabrics*

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RECENT TECHNICAL AND COMMERCIAL DEVELOPMENTS

by J. B. Goldberg
Consultant to the Textile and Allied Industries

Exclusive

FIBERS AND YARNS

Textured Filament Verel. Eastman Chemical Products is now offering their continuous filament Verel modacrylic yarn in textured form for use in carpeting. Priced at $1 per lb in the natural color and $1.20 per lb in solution dyed (six colors) form, this yarn is said to provide good cover, resistance to flame, mildew, and moths.

Improved English Triacetate. Courtaulds Ltd. has introduced an improved "Tricel H" triacetate yarn with higher strength and abrasion resistance. Tenacity is reported to be improved by 20%, making possible new end uses in such items as shirtings and washable rainwear as well as knitted lingerie fabrics. It is suggested that this new yarn may also be suitable for texturizing.

High-Strength Silk. At the recent International Silk Congress delegates were told of a new heat-treated raw silk which was coated with a resin compound to impart greatly increased strength. It was indicated that such yarns could be produced for weaving without knots and with uniformity of thickness similar to nylon. Further studies were under way on the dyeing characteristics of this treated silk.

Conjugated Artificial Filaments. A British patent assigned to the American Viscose Corp. covers the extrusion of two filament yarns through a common orifice simultaneously, one spinning solution containing 80-90% of carbon particles, the two then joining to form conjugate filaments. This is suggested as a convenient form in which to use activated charcoal for decolorizing solutions or absorbing gases.

Protein - Detergent Filaments. Two patents recently issued to the National Lead Co. disclose a method for forming a mixture of protein and an organic sulfonate detergent as a spinning solution for the extrusion of filaments in an acid-salt bath.

More Polypropylene Fiber. A New York company has announced plans to enter into the production of polypropylene fiber, utilizing Italian know-how.

Foreign Nylon Carpet Staple. British Nylon Spinners have announced the marketing of a new nylon staple for use in carpeting.

MACHINERY AND PROCESSES

Textured Terylene in Knitwear. A new process, developed in England, has been acquired by Canadian Industries Ltd. for the production of bulked Terylene polyester yarns. It is said that the method provides a high degree of bulk with an exceptionally low amount of stretch. Early output is scheduled to go into the production of women's sweaters, skirts, and suits of yarn-dyed textured Terylene.

Travelerless Spinning Device. A Japanese woolen mill has demonstrated a 36-spindle model frame which uses a travelerless ring spinning device capable of operating at up to 14,000 rpm. The equipment consists of an outer ring, a permanent magnet, and a polished inner ring which floats in a magnetic field. One size ring is suitable for any size yarn. Pending the granting of patents, no plans have been disclosed for manufacturing the rings or selling them abroad.

New Embroidery Machine. An Italian machine which utilizes the Schiffli process was recently demonstrated in the United States with claims made for a 50% increase in productivity over conventional machines. Also, fabrics of 40″ width can be handled, as compared with only 24″ goods on the present older equipment.

High - Speed Circular Loom. From Japan has come a report of a new circular loom operating at 10,000 picks per minute.

Licensed for Twisted Paper. Meadows Manufacturing Co., Atlanta, Ga., and Whitin Machine Works, Whitinsville, Mass., have been licensed by Enterprise, Inc., Dallas, Texas, to conduct research and development on slitting and twisting paper and other materials by the Marks System. The System makes it possible to produce yarn from sheets of paper in a continuous operation. (Note: The paper tubing described on page 159 is knitted from yarns produced on Meadows twisters by this one-step, paper-to-yarn method.—The Editors.)

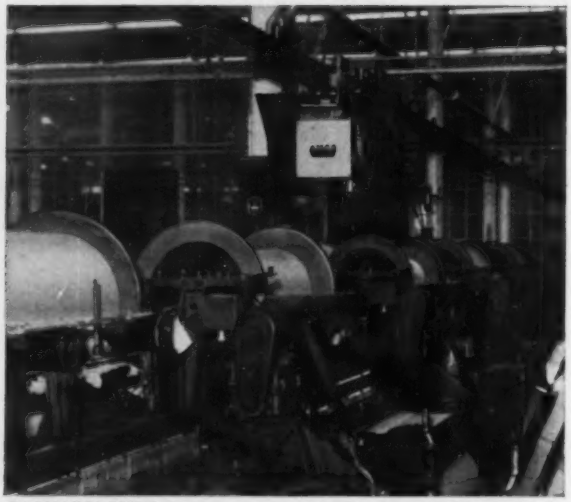
More Compact Wool Bales. Bales of Australian wool will shrink from 21 cu ft to 6 cu ft, but will still weigh 300 lb, if a new baling process developed by Commonwealth Scientific and Industrial Research Organization is successful. Saving on shipping (which is based on volume rather than weight) would be about $15.7 million a year, according to CSIRO.

Draper Doffer Coming. Redesign and engineering work on the automatic doffing machine recently acquired by Draper Corp. from Willcox & Gibbs Sewing Machine Co. is reported on schedule, with limited production planned for early next year. Also planned for 1962 are field tests of recent improvements to the DSL loom.

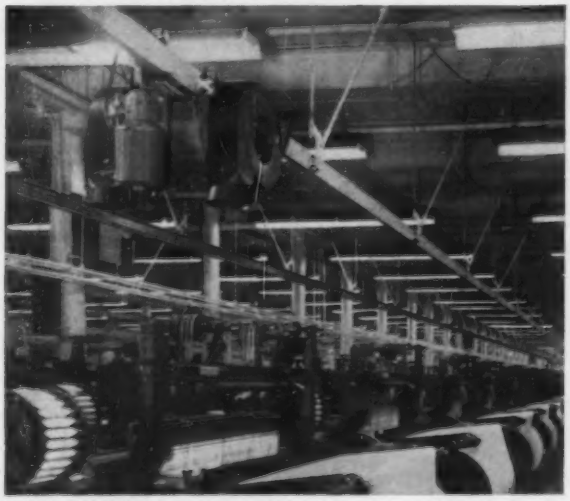
Polyester Tire Cord. A two-step dip makes polyester cord stick to rubber, according to Goodyear scientists. First, the cord goes into a resin dip with one chemical missing. Then it's treated at 450-500 F, causing the resin to cross-link with the polyester. Then comes a second dip, with the missing chemical restored, causing a fiber-resin-resin cross linking.

4 leading textile mills keep work areas clean automatically with Amco equipment

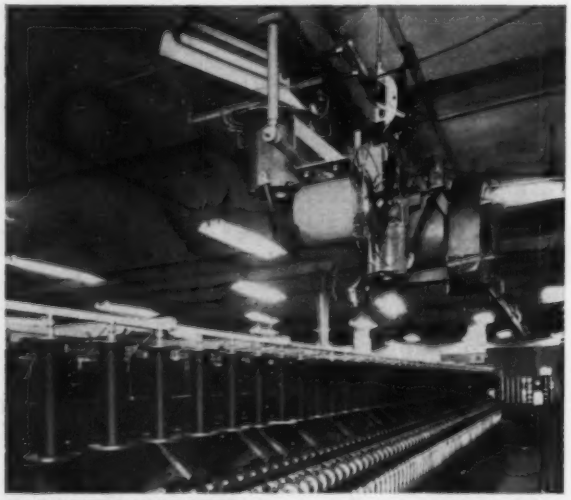
ALICE MANUFACTURING makes fine broadcloth in its Foster plant. Ceilings, walls, beams, pipes in card rooms are kept free from fly and lint with Amco Ceiling Cleaners. Result: fewer production interruptions for manual cleaning . . . and better quality.



CANNON MILLS, Kannapolis, N. C. plant produces high-quality terry cloth on looms equipped with Unifil loom winders. This fabric maker uses Amco Heliclone® Loom Cleaners for automatic, continuous cleaning. Result: greatly improved weave room cleanliness.



MAYFAIR MILLS, Spartanburg, S. C., relies on Amco Heliclone Loom Cleaners in print cloth weave rooms. Amco Cleaners drastically reduce manual cleaning costs . . . step up production . . . improve fabric quality by preventing waste accumulation.



PALMETTO WORSTED, Laurens, S. C. uses both Amco Heliclone Cleaners and Amco Ceiling Cleaners in its worsted spinning operation. Amco equipment prevents waste, lint and fly accumulations . . . boosts production and helps maintain quality.

Learn how Amco automatic cleaning equipment can help *your* mill. See your nearest Amco representative.

AMCO

SINCE 1888

Air Conditioning Equipment — Textile Specialties

American Moistening Company, Cleveland, North Carolina Branches: Atlanta, Georgia, Providence, Rhode Island, Toronto, Ontario.

For further information use Handy Return Card, Page 173

Overdrying cotton at gin can change fiber shape

by L. P. Berriman
Supervisor, Chemical Engineering
Stanford Research Institute
So. Pasadena, California

Extract*

■ OUR RESEARCH on cotton drying at the gin has led to the discovery of three areas of changes occurring in the fiber due to extensive drying. These are:

1. Changes in location (bonding) of water in the fiber.
2. Permanent changes in the physical shape of the fiber (increase in the number of convolutions).
3. Changes in the chemical structure and physical properties of the fiber surface.

*From paper presented at the recent Western Cotton Production Conference, sponsored by the National Cotton Council.

Surface Changes Being Stressed. At present we are concentrating on changes occurring on the fiber surface, because it is so important and can explain many of the problems encountered with overdried fibers, such as poor spinning and dyeing, increased nep formation, and decrease of chemical activity as measured by reactivity with cross-linking agents.

Wax. We have found that fiber wax is particularly sensitive to heat, which results in changes in its chemical composition and "apparent" loss as measured by our ability to extract the wax from the fiber after drying. Major changes noted occur at temperatures above 212 F. Several compounds not yet identified have been found to be given off by fibers drying in the above temperature range.

We also have found that the rate of wetting of cotton increases and dyeing characteristics change again, mainly on fibers dried above 257-298 F. The frictional characteristics of the fiber are also changed.

We have found no change in overall fiber structure (as determined by infrared) with heat. Considering the above mentioned changes, this indicates that the changes occurring are mainly on the surface.

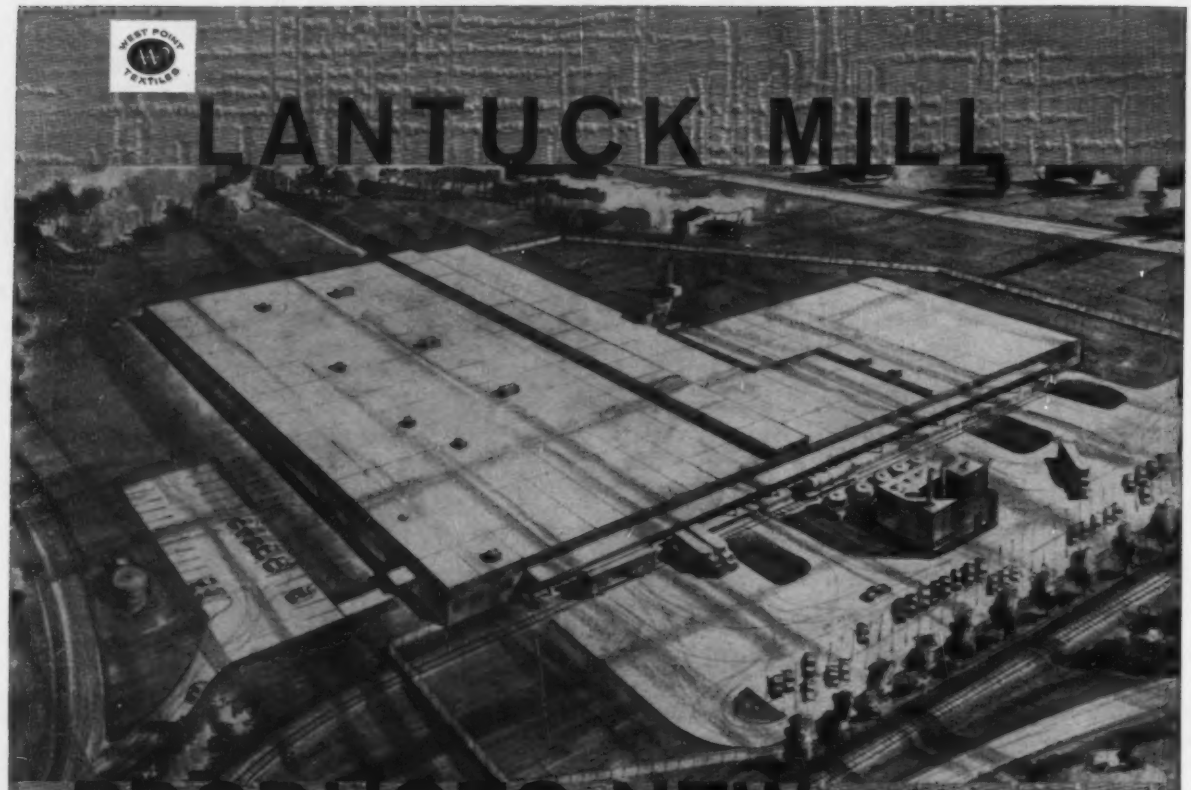
Fiber Shape. Since fiber shape is important in spinning, the finding that permanent changes in fiber shape can be caused by overdrying is very significant. These changes are mainly an increase in the number of convolutions in the fiber. New convolutions appear at low drying temperatures, but are not permanent unless the fiber is heated above 298 F.

Continued on page 114

PENSION and PROFIT-SHARING PLANS

TRUST COMPANY OF GEORGIA ATLANTA

. . . the bank serving businesses large and small since 1891



LANTUCK MILL

PRODUCES NEW, NON-WOVEN MATERIALS

West Point Manufacturing Company's new 200,000 square foot plant, now in operation at Fairfax, Alabama, was especially designed by Robert and Company Associates for the production of non-woven materials. The process which was developed by West Point in a pilot plant operation, produces non-woven materials for a wide variety of industrial and commercial uses including, Fabrique, a decorative wall covering.

In planning improvements, additions or plant relocation of your textile production facilities, take advantage of Robert and Company Associates' 42 years experience in working with these industry leaders:

ROBERT AND COMPANY ASSOCIATES
Textile Engineering Division
ATLANTA

Aberfoyle Manufacturing Co.
American Bemberg Corporation
Bachmann-Uxbridge Company
Bibb Manufacturing Company
Cabin Crafts, Inc.
The William Carter Company
Chicopee Manufacturing Corp.
Cluett Peabody & Company, Inc.
Columbus Fiber Mills Company
Columbus Manufacturing Co.
Crompton Company
Crystal Springs Bleachery
Dixie Mercerizing Company
Dundee Mills, Inc.
Fieldcrest Mills, Inc.
B. F. Goodrich Company
The Goodyear Tire & Rubber Co.
P. H. Hanes Knitting Company
The Jefferson Mills, Inc.
Katherine Rug Mills, Inc.
John P. King Manufacturing Co.
James Lees and Sons Company
Kerr Bleaching & Finishing Works
Mission Valley Mills, Inc.
Mount Vernon Mills, Inc.
Muscogee Manufacturing Co.
North Carolina Finishing Co.
Opelika Manufacturing Corporation
Peerless Woolen Mills
Pepperell Manufacturing Company
Puritan Cordage Mills, Inc.
Russell Manufacturing Company
Southern Bleachery & Print Works, Inc.
Southern Chemical Cotton Company
The Springs Cotton Mills
Standard-Coosa-Thatcher Company
J. P. Stevens and Company, Inc.
Swift Manufacturing Company
Swift Spinning Mills
Textiles-Incorporated
Thomaston Mills, Inc.
United Merchants & Manufacturers Co. Inc.
West Boylston Manufacturing Co.
West Point Manufacturing Co.

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EXECUTIVE VIEWS

AATCC makes a wrong move

■ A few weeks ago the American Association of Textile Chemists and Colorists announced that it was moving its national headquarters from Lowell, Mass., to New York City. And thereby hangs a tale.

AATCC pretty much had to move; the situation at Lowell Technological Institute had deteriorated to the point where the move was inevitable, even if no other reason for leaving Lowell had existed. But when it came to picking the site for the new headquarters, we can only wonder what happened to the Southern locations that were not only offered but actively promoted.

AATCC is a composite group of dyestuff and chemical manufacturers, other suppliers, and their salesmen, along with textile mill dyers, chemists, and technicians. About 30% of the membership work for the mills; most of the rest are suppliers of one sort or another. The mill men are a minority group.

That must have been what the AATCC Council had in mind when New York was selected for the new headquarters. The announcement by AATCC's executive secretary explaining the Council's decision states that New York is centrally accessible, that the Association's magazine is published there, that the trade press and communications facilities are handy, and that there are other technical societies headquartered in New York.

Actually, the selection was not that simple and a lot of folks know it. There were invitations from six places for the new headquarters: New York; Philadelphia; the Research Triangle Park near Raleigh, N. C.; North Carolina State College, Raleigh; Clemson College, Clemson, S. C.; and Washington, D. C.

There is a great deal of politics in AATCC as there is in every organization. For years the organization was dominated by the New England, New York, and Philadelphia Sections, even up to the point that the Southern Councilors, we are told, unofficially banded together to keep from getting "railroaded."

Apparently they didn't band closely enough together or they got "out-politicked" in this movement of headquarters. And in our

"Aren't you glad we agreed on New York?"

"Top 10 Plants" Award Winner

HANES HOSIERY MILLS'
WEEKS DIVISION

Fully air-conditioned by Bahnson

Consulting Engineers: Davidson and Shepard

16-acre Weeks Division Plant requires 3300 tons of refrigerated air-conditioning.

Inspecting the air-conditioning in the modern Looping Room of the Weeks Division are Hanes Board Chairman R. B. Crawford and Agnew Bahnson, Jr., President, The Bahnson Company.

Factory Magazine Cites Hanes Plant for "Overall Excellence in Planning and Construction"

Bahnson Central Station Systems at the new Weeks Division Plant provide year 'round air-conditioning, custom-designed to suit each step in Hanes' integrated manufacturing process. Hanes Board Chairman R. B. Crawford praised the Bahnson air-conditioning installation and its operational efficiency. The Bahnson Company takes pride in being part of Hanes' nationally acclaimed Weeks Division Plant.

Call in Bahnson when you have air-conditioning problems or plans. Bahnson specialists are backed by almost a half century's experience in industrial air-conditioning.

Bahnson

AIR-O-MATION

THE BAHNSON COMPANY • WINSTON-SALEM, N. C.

For further information use Handy Return Card, Page 173

opinion AATCC has made a wrong move.

We submit that the South is more important to AATCC than the percentage of mill membership and the percentage of members in the southern textile areas would indicate. Membership in the North is static or declining; in the South it is growing. Southern members represent the bulk of U.S. dyeing and finishing capacity.

The AATCC makes a great to-do over the solicitation of additional mill members. Membership drives are always aimed at dyers, chemists, and other mill personnel. There is apparently a lack of sincerity in these solicitations when New York is chosen for the Association's headquarters, rather than a Southern location from which mill members could be more adequately served.

We feel, and we know that our feeling is shared by a great majority of AATCC's other members in its Southern Region, that the Research Triangle Park was the only logical location for the new headquarters.

It would certainly have been impossible to select a more expensive location than New York, the highest-rent city in the world. And southern mills had offered to contribute to a building in the Research Triangle Park. Further, if the AATCC is to continue to do textile research, it seems to us that the South is a more logical place than New York to do it.

But now that's water over the dam. And the tail in New York will continue to wag the AATCC dog in the South.

FUTURE EVENTS

Date	Event	Location
Sept. 7-8	Combed yarn Spinners Association annual meeting	The Greenbrier White Sulphur Springs, W. Va.
9	Southeastern Section AATCC	Callaway Gardens Pine Mountain, Ga.
12-14	Southeastern Maintenance & Engineering Show	War Memorial Coliseum Greensboro, N. C.
12-14	Southeastern Plant Engineering & Maintenance Seminar	Town Hall Greensboro, N. C.
14-15	Northern Textile Association annual meeting	Poland Spring House Poland Spring, Me.
14-15	Textile Processing Symposium, sponsored by American Gas Association	Clemson House Clemson, S. C.
15	Delaware Valley Section AATCC	Wilmington, Del.
15-16	Palmetto Section AATCC	Clemson House Clemson, S. C.
21-22	Carded Yarn Association annual convention	The Cloister Sea Island, Ga.
21-22	Southern Textile Methods & Standards Association	Clemson House Clemson, S. C.
21-22	Chattanooga Yarn Association outing	Read House Chattanooga, Tenn.
23	Piedmont Section AATCC	Hotel Barringer Charlotte, N. C.
27-29	AATCC national convention	Hotel Statler Buffalo, N. Y.
Oct. 5-6	North Carolina Textile Manufacturers Association, Inc., annual meeting	Carolina Hotel Pinehurst, N. C.
5-6	Textile Quality Control Association	Sedgefield Inn Greensboro, N. C.
7	Alabama Textile Operating Executives carding and spinning discussion—9:30 a.m.	Thach Auditorium Auburn, Ala.
11-13	Quartermaster Association national convention	Biltmore Hotel Atlanta, Ga.
11-21	International Knitting Machinery & Accessories Exhibition	Belle Vue Hall Manchester, England
11-13	Fiber Society	West Point, N. Y.
12-14	Symposium on Permanent Finishing, sponsored by Swiss Association of Textile Chemists & Colorists	Zurich, Switzerland
14	Textile Operating Executives of Georgia slashing and weaving discussion	Ga. Tech Atlanta, Ga.
14	South Carolina Div. STA	Clemson, S. C.
16-20	National Safety Congress	Hotel Hilton Chicago, Ill.
19-20	Southern Textile Research Conference	William Hilton Inn Hilton Head Island, S. C.
Nov. 1-2	Textile Engineering Div. ASME	MIT Cambridge, Mass.
1-3	Industrial Engineering & Management Clinic, sponsored by Industrial Management Society	Pick-Congress Hotel Chicago, Ill.
8-9	Chemical Finishing Conference	Sheraton Park Hotel Washington, D. C.
13-15	Narrow Fabrics Institute	Statler Hilton New York City

Who's taking in whose washing?

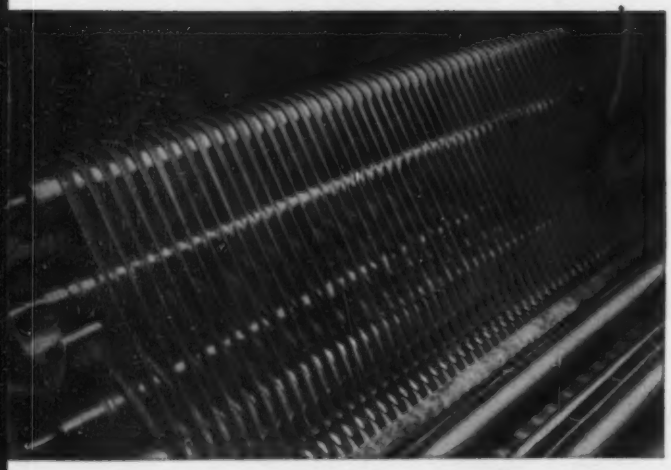
The United States-Japan Trade Council recently sent us a copy of a speech made by Herbert V. Prochnow, executive vice-president of The First National Bank of Chicago. We were particularly intrigued by this statement of Mr. Prochnow's: "Purchases we make from Japan result in Japan's receiving dollars which she can spend in our markets."

That reminds us of the town in the story, where each family made a comfortable living doing the next door neighbor's washing. And when they wanted more money, all they did was raise the price of a washing.

G.H.D.

Dayco's R 792 Rub Apron...

your guarantee of trouble-free carding



There's a difference in Dayco Condenser Tape

Dayco Endless Condenser Tape, with a permanently square edge, provides a remarkable precision fit in the steel roller grooves. It virtually eliminates groove-jumping, twisting, and turn-over. And the precise compounding of Dayco Condenser Tape prevents stretching and cracking, reduces take-ups, eliminates static as well as oil deterioration.

Stealing is reduced to an absolute minimum, and better performance in general results when Dayco Condenser Tapes are on the job. Available in all lengths and widths, Dayco Endless Condenser Tapes are longer lasting, as well as lower in original cost.

Could any rub apron exceed the serviceability of the Dayco rub aprons of recent years? Or be stronger . . . or longer lived? Could any apron match it for quality—and quantity—of yarn?

Dayco engineers—knowing better than anyone else the high standards to which existing Dayco aprons were designed—might be excused for doubting it. But Dayco scientists are not disposed to consider *any* product the final word.

Dayco Research Brings Results

Now, through continuing research and experimentation comes a new Dayco rub apron, the Dayco R 792—able to combat more successfully than ever before the problems involved in the carding operation.

In laboratory tests that simulate mill conditions, actually *exceed* the stresses and demands normally found in use, the Dayco R 792 outperformed all comers. Here are some of the particulars:

With this new apron, you'll have 78% more strength at the ends . . . strength that enables it to withstand more than 100 lbs. of additional stress without damage to apron buttons. And you'll find that same factor of added strength throughout the body of the R 792 rub apron, too.

A. The Dayco R 792 Rub Apron provides 78% more strength at the ends, with buttons able to resist up to 100 pounds more pressure and still stay locked in place.

B. The inner and outer surfaces of the Dayco R 792 Rub Apron have extremely high resistance to oil of every sort. This includes natural oil of wool and other fibres, as well as all commonly used machine oils, anti-static agents, and special emulsions.

C. The Dayco R 792 Rub Apron is compounded of material highly resistant to abrasion, to give impressive reduction in surface wear. Its special textured surface has a coefficient of friction ideal for a majority of fibres and yarns. It retains it throughout its life without cleaning.

D. The Dayco R 792 is designed to hug the rolls closely, for better tracking and easy alignment.

Surface Superiority That Lasts

The surface of the Dayco R 792 has received a great deal of attention. Its texture is suited to a broad range of fibres and yarns. Its coefficient of friction is ideal for most carding tasks, having proven itself again and again in carefully-controlled test situations. Never varying from apron to apron, the R 792 surface texture permits consistent delivery of uniformly high-quality yarn.

In addition, you'll find that the Dayco R 792 surface holds up through longer use. Compounded of more abrasive-resistant materials, this apron retains its exact coefficient of friction through all its long life. It requires no oil of any type. It requires no cleaning, either, since one apron continuously cleans the other, in operation.

What about alignment? Again, no problem, since all Dayco rub aprons are designed to hug the rolls tightly for better tracking and perfect fit.

Dayco R 532 Offers Smoother Surface

Should you desire a smoother surface, you'll find Dayco's other fine rub apron, the R 532, very much to your liking. Developing less rub on fibres than the textured-surface R 792, it is engineered and produced to meet the same high performance standards . . . fully.

So choose either Dayco Rub Apron—or, if you wish, pair them, to obtain an intermediate degree of rub. Whichever you select, you'll be putting Dayco know-how . . . Dayco precision design . . . to work for you. Whatever your carding requirements, you'll find them fully met by these outstanding Dayco rub aprons . . . evidence of Dayco's continuing search for better ways of meeting the needs of textile men everywhere.

Ask your Dayco Representative to set up a trial installation, so you can check Dayco's findings, first-hand, in your own carding room. For further information, phone or write Dayco Textile Products Co., 401 S. C. National Bank Bldg., Greenville, S. C. Overseas Plant: The Dayton Rubber Co., Ltd., Dundee, Scotland.

Dayco TEXTILE PRODUCTS CO.

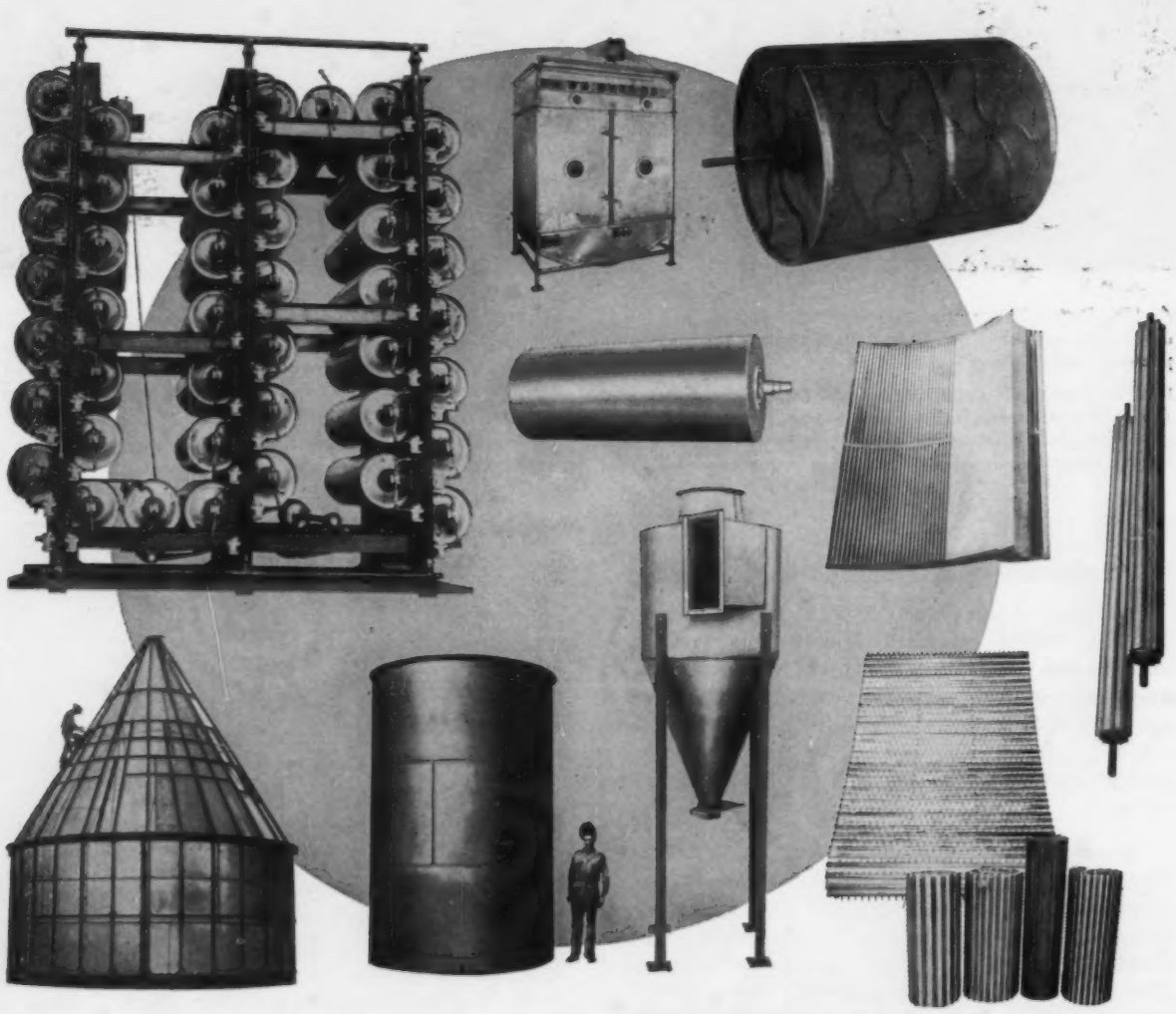
Division of Dayco Corporation

"Custom tailors" to industry

Since 1926, Sims has been designing and fabricating the specialized equipment called for in the manufacture of textiles.

As "custom tailors" of stainless steel, Sims' recommendations, designs, and fabrications are dictated by your particular problem, need, requirement or application of equipment. And, Sims specialists are on the job from start to finish to assure meticulous attention to even the smallest detail... the craftsmanship that unconditionally guarantees that the finished product will meet and surpass your most exacting specifications.

rolls · vessels · kettles · coils · size boxes · linings · cylinders · machinery · air and material handling systems . . . for textile · chemical · food processing · pulp-paper and other industries



Write, wire or call today for complete information:

Harley D. Hohm, Inc., 128 Buist Ave., Greenville, S. C.
Friday Textile Machine & Supply Co., Gastonia, N. C.

Sims
METAL WORKS
WEST POINT, GEORGIA

Specialists in
Stainless Steel Fabrication

For further information use Handy Return Card, Page 173

Staley's presents:

Weavers Through The Ages

North America...1528

De Vaca's explorations brought him in contact with Indians who were gathering wild cotton which they spun and wove into cloth.

In 1528, a Spanish adventurer with the romantic name of Cabeza de Vaca—literally translated, "Cow's Head"—explored at great lengths the territory which is now Louisiana and Texas.

Among the most interesting of his discoveries, de Vaca found Indians gathering wild cotton which they spun and wove into cloth. Here, perhaps, is the very earliest record of a textile industry north of the Rio Grande.

Protective clothing was the primary goal of these early American weavers. But as each succeeding generation of textile men added to their skills—as the quality and versatility of their fabrics improved—as new processes, new blends, new synthetics were discovered—this basic usage has been expanded into hundreds of different applications. Applications that have helped raise the social and economic standards of our society.

And these high standards make exacting demands on products and services. Only the best will do. Because of this, textile men everywhere look to Staley's extensive research, unsurpassed technical know-how and complete line of uniform, quality starches, gums and dextrins—not only to help them fulfill the requirements of today but to meet the even higher standards of tomorrow.

A. E. Staley Mfg. Co., Decatur, Illinois

Branch Offices: Atlanta · Boston · Chicago · Cleveland
Kansas City · New York · Philadelphia · San Francisco · St. Louis

WHITIN

takes the *First* **BIG STEP**

toward the

MILL of TOMORROW

with the NEW

AUDOMAC

DOFFER SYSTEM

The AUDOMAC Doffer System — the most dramatic textile machinery development in years, significantly improves the economics of spinning room operation.

Developed by Deering Milliken Research Corporation, the AUDOMAC (automatic doffing, monitoring and cleaning) is a complete and efficient bobbin handling system, proven by the doffing of millions of bobbins in actual mill operation. It doffs a full frame of any length in just two minutes *and* automatically performs six other major operations before and after doffing, including overhead cleaning.

Whitin, by applying its full resources and skills to the production and marketing of the AUDOMAC, has indeed taken the *first step* toward the automated mill of tomorrow.

Why don't you take the next? Call your Whitin sales representative today — he is ready to talk AUDOMAC to you — right now!

Manufactured and marketed exclusively by Whitin in the United States under license from Deering Milliken Research Corporation

WHITIN

The best way to better yarns

WHITIN MACHINE WORKS • WHITINSVILLE, MASSACHUSETTS

CHARLOTTE, N. C. • GREENSBORO, N. C.
SPARTANBURG, S. C. • ATLANTA, GA.

For further information use Handy Return Card, Page 173

Quick delivery of the Drive you need!

Typical final assembly of A-S Drives from completed sub-assemblies

When you purchase a Square D A-S Drive, you get a complete "package"—including drive motor, operator's station and all controls. You also get these important advantages:

QUICK DELIVERY • Square D's unique method of stocking sub-assemblies means quicker deliveries of packaged drives to meet your requirements.

EASY INSTALLATION • Maintenance manuals are complete in every detail, including step-by-step installation instructions. Moreover, each **A-S Drive** is completely factory-tested and adjusted when shipped — only a few trimming adjustments are needed to put it in operation.

MINIMUM MAINTENANCE • Industrially rated components are used throughout, and extra-sturdy cabinets give lasting protection. Static elements and encapsulated circuits—which are virtually maintenance-free — are utilized wherever possible.

EXTRA SAFETY • Only push buttons with heavy-duty construction and potentiometers with industrial clearances are used in operator's stations, for maximum personnel safety.

WIDE VARIETY AVAILABLE • There's a Square D "package" for *any* adjustable-speed job. You can choose from electronic, magnetic amplifier or motor-generator types — with ratings from 1/20 to 400 hp — and with accuracies to within fractions of 1%.

FIELD APPLICATION HELP • Square D has wide experience in the design and manufacture of adjustable-speed drives, and field specialists are trained to help you in the selection of the proper drive.

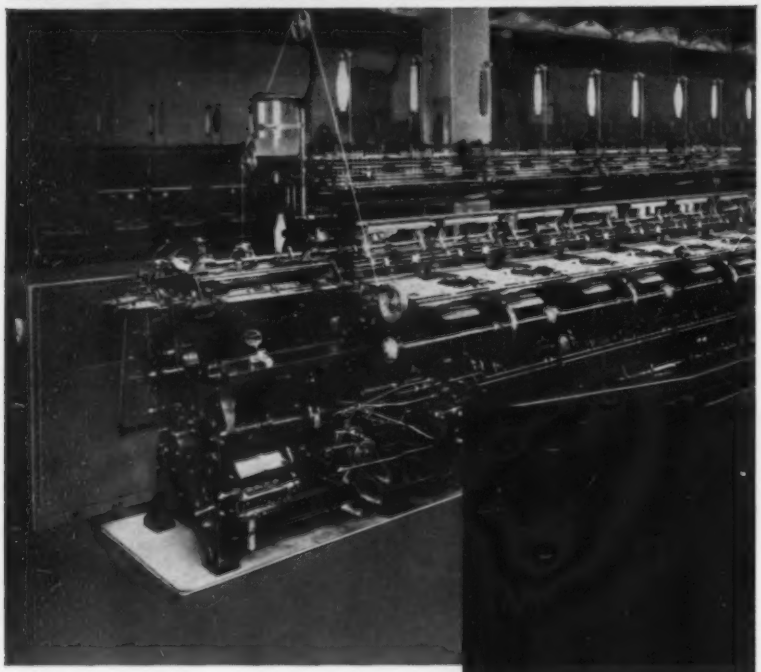
Write FOR BULLETIN • *Square D Company, 4041 North Richards Street, Milwaukee 12, Wisconsin*

SQUARE D COMPANY

wherever electricity is distributed and controlled

MODERNIZATION WITH A PURPOSE

(A Production Tip from Bijur)



Through the years, you have probably seen Bijur Automatic Metered Lubrication become standard equipment on the machines you purchase. The reason is, machine manufacturers have found that the increased production, extended machine life, and reduced operating costs that Bijur provides, save their customers money.

You *know* Bijur is available on most new equipment. But did you know that your present standard machines could contribute to higher production if they were Bijur-equipped? This proven system could be saving you money right now.

The installation of Bijur systems requires very little time and, like the system itself, is surprisingly inexpensive.

Write today for additional information on how Bijur can be added where needed.

BIJUR LUBRICATING CORPORATION

155 West Passaic Street • Rochelle Park, New Jersey

Pioneers in Automatic Lubrication

4228

SHORTS & REMNANTS

(from page 12)

Laminating & Finishing Corp., Brooklyn, N. Y.; **George F. Walz,** chief chemist, Proximity Print Works, Greensboro, N. C.; **David Olken,** treas., Dyecraftsmen, Inc., Hingham, Mass.; **K. M. Dugan,** v-p, Bridgeport Fabrics, Inc., Davidson, N. C.; **Joseph Satinsky,** mgr., Delaware Valley Finishing Co., Philadelphia, Pa.; **S. M. Thomson,** supt. of finishing, Riegel Textile Corp., Ware Shoals, S. C.; **E. A. Calderon,** res. dept., Dan River Mills, Danville, Va.; **N. C. Gryndahl,** mgr. spinning div., The Monarch Knitting Co., Ltd., Toronto, Ont.; **Harry White,** Malna Hosiery Co., Mt. Pleasant, Tenn.; and many others.

Prints Henequen

"Would like to buy a second-hand machine for printing henequen fabrics."

JOAQUIN PENICHE S.
Sisal, S.A.
Merida, Yuc., Mexico

This one baffled us. If anyone would like to sell such a machine to Sr. Peniche, we'll be glad to provide his full address.

► After our brief item on the John Birch Society in July (page 29), a friend told us about a new offshoot of this group. It's called the B. Smirch Society, and its motto is "Drive dangerously—the pedestrian you kill may be a Communist."

Pocket Translator

Through the courtesy of *The Management Review*, we are able to bring you this "Pocket Translator for Checking Executive References." It is well known that all that glitters is not necessarily gold—and this sometimes applies to references presented by hopeful job-seeking executives. Sometimes, in fact, the statements in references must be translated like this:

"He's a consistently good team worker."

Hasn't had an original thought in twenty years.

"He's always staunch in supporting his superiors' recommendations."

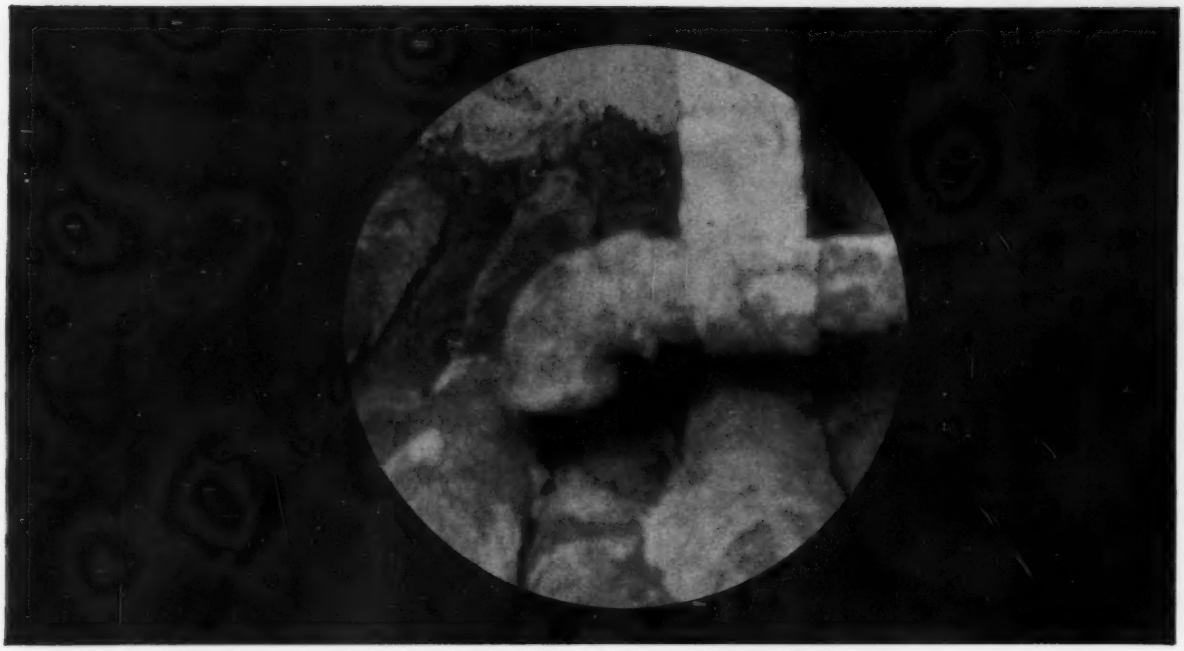
A yes man.

Continued on page 46

For further information use Handy Return Card, Page 173

BRAXON

stops scale and corrosion



Braxon conditions water, protects boilers

BRAXON is a specially formulated feedwater treatment that conditions water to remove and prevent scale formation and corrosion in boilers. BRAXON bases its effectiveness on phosphate and carbonate control... maintaining the proper alkalinity and softness in the boiler water. Special BRAXON formulas inhibit the tendency of some feedwaters to produce foaming and carryover. No single formula can be applied successfully to all the various types of boiler feedwater, so BRAXON formulas are prepared specifically for use in *your* plant after a careful analysis and study of raw water used. Your BRAXON formula will keep your boiler operating at top efficiency, eliminating shut-downs and repairs caused by corrosion and scale...BRAXON can save your company money.

Write today and request that an Anderson service engineer make an analysis and recommendations for your plant's water treatment. There's no cost for this service.

SPECIALISTS IN MAKING WATER BEHAVE

Anderson Chemical Company, INC.
Macon, Ga., Box 1424 • Phone Sherwood 5-0466
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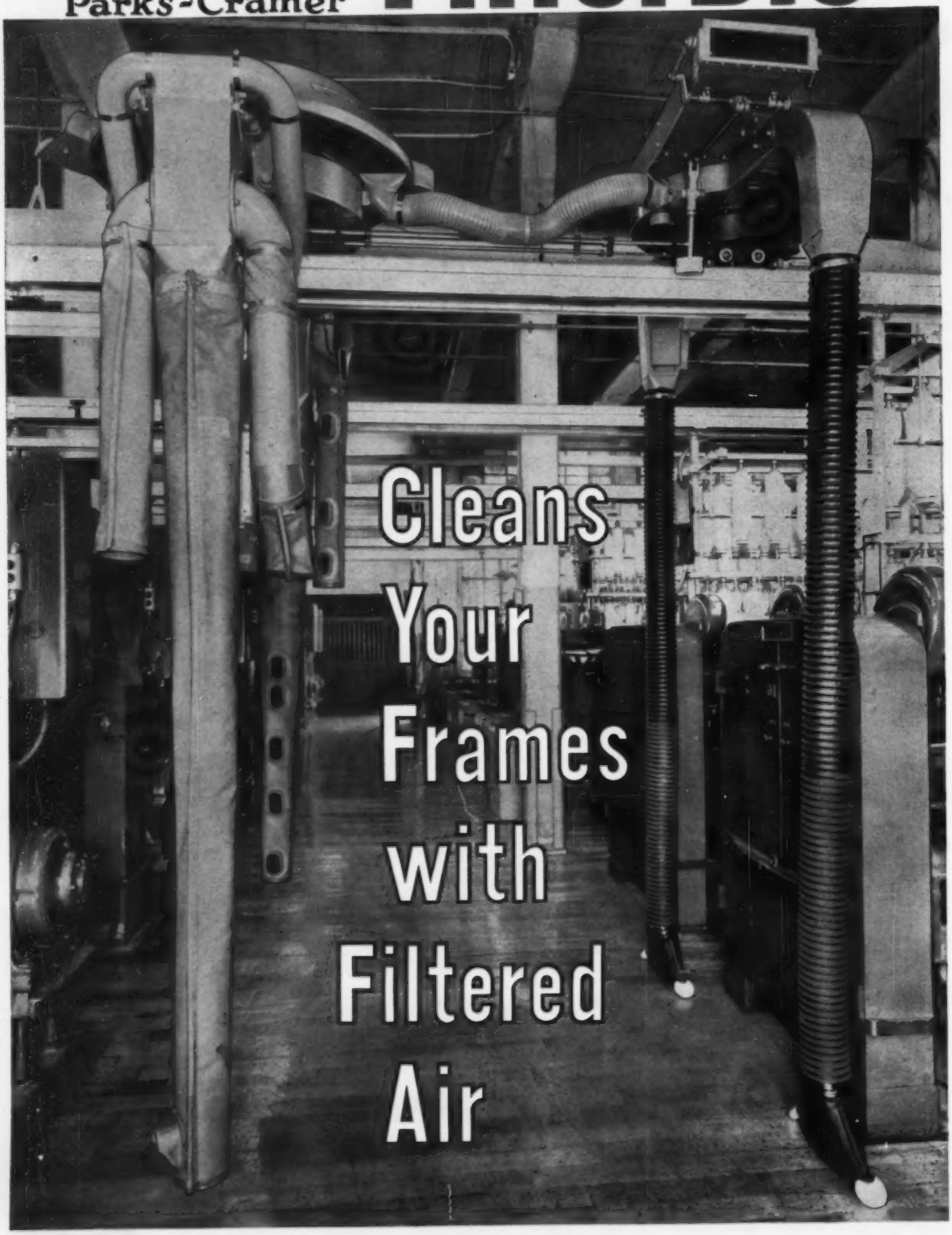
Dallas 7, Texas: Box 10444, Industrial Station • Phone: RIverside 8-7080

Parks-Cramer **FilterBlo**

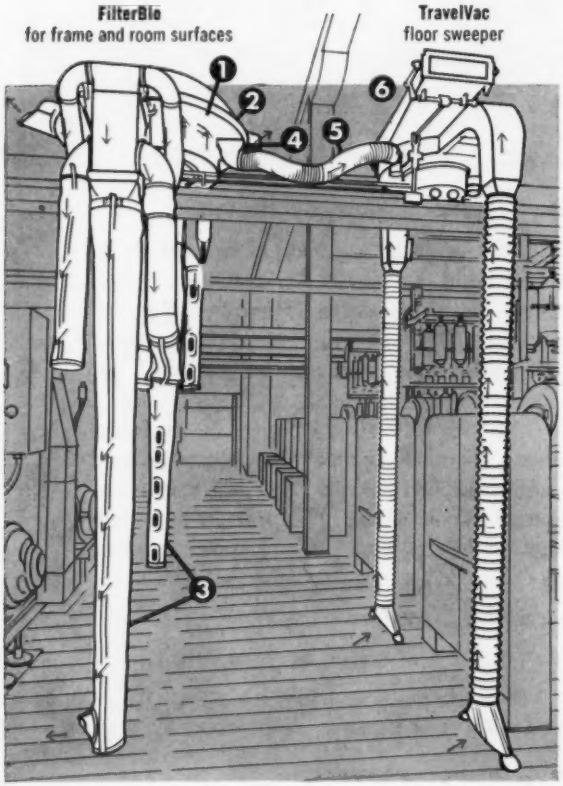


For further information use Handy Return Card, Page 173

A major advancement in Traveling Cleaners! **FilterBlo** by Parks-Cramer cleans air of lint and fly before entering blower . . . eliminates risk of lint discharge on yarn-in-process . . . reduces bunches, slubs, traveler loading, ends down, contamination . . . saves labor . . . improves quality.

FilterBlo
Frame and Room Cleaner (left)
operating in tandem with
TravelVac
Floor Sweeper (right)

FilterBlo Pre-filters All Blowing Air



FilterBlo cleans with filtered air overhead surfaces, creel, drafting and spinning areas, underframe, and moves lint into spinners alley for collection by TravelVac.

Room air enters FilterBlo through 420 square inches of perforated, teflon-coated, stainless steel filter plate (1), located on bottom of rotating assembly. Revolving Up-draft blower (2) sweeps ceiling and overhead surfaces with diagonal air currents. Flexible sleeves with multi-outlets (3) are engineered to fulfill exact cleaning requirements. Air inlet filter is vacuum-cleaned (4) continuously by coupled TravelVac through connecting vacuum sleeve (5).

FilterBlo Cleaner teams with TravelVac Floor Sweeper (6) of either the Long Storage or automatic unloading type for superior cleaning of entire room.

Write or phone for further information

Parks-Cramer Company
FITCHBURG / MASSACHUSETTS
CHARLOTTE / NORTH CAROLINA
ATLANTA / GEORGIA

Traveling Cleaners Since 1926

448

New Model

FRACTIONAL HORSEPOWER

DYNAMATIC AJUSTO-SPEDE® DRIVE

Steps up Reliability and Durability

New in design but a veteran of proven dependability, the Eaton-Dynamatic Fractional HP Ajusto-Spede Drive offers a compact, low cost solution to adjustable speed control problems. Improvements include:

- **Longer operating life**
- **More uniform cooling**
- **Less noise and vibration**
- **Lighter weight**
- **Compact design**

The Ajusto-Spede Drive offers advantages not found in other methods of control. It is low in cost and easily installed. It is an integral combination of AC constant speed induction motor, eddy-current couplings, and single tube, electronic control. Special control functions, such as acceleration, inching, threading, cascading of multiple units, follower operation, constant tension and clutch motor operation can be provided by remotely mounted electronic controls.

Ajusto-Spede Drives operate on standard 115/230 volt, single phase, 60 cycle or 220/440 volt, 3 phase, 60 cycle alternating current. No special power source is required. Available from the manufacturer or from your nearest Dynamatic Distributor in sizes of ¼, ½, and ¾ HP at 1600 RPM and ½, ¾, and 1 HP at 3200 RPM. Can be supplied with either of two types of electromagnetic friction brakes and integral speed reducer in a wide variety of gear ratios.

Send for Illustrated Descriptive Literature

EATON — DYNAMATIC DIVISION —
MANUFACTURING COMPANY
3122 FOURTEENTH AVENUE • KENOSHA, WISCONSIN

...Your partner in progress through research...

For further information use Handy Return Card, Page 173

Weaving Problems?

SEND FOR A P&F TEXTILE SERVICE MAN!

The know-how of our textile experts goes far beyond the proper use of P&F starch products, and so do their suggestions. Each man on our technical service staff brought to his job outstanding technical skill and problem-solving ability—the basis of selection. Further experience as a Penick & Ford representative broadened and deepened his knowledge in the textile field. Behind him are the personnel and facilities of P&F's advanced research laboratory.

If you're interested in improving your operations—and who isn't—don't overlook this opportunity to get a fresh slant from a "pro." No strings attached.

Penick & Ford

PENICK & FORD, LTD.
INCORPORATED
1531 Marietta Blvd., Atlanta, Ga.

The P&F Textile Service Man tests yarns and fabrics for added weights, tensile and other properties

Checks out your warp sizing, finishing and glazing solutions under actual production conditions

Studies equipment and methods . . . uses his wide experience to help you attain top performance

More than 500 varieties of starches and starch derivatives in these families: Penford Gums • Pensize Gums • Penford Finishing Gums • Essex Gums • Clearsol Gums • Douglas Pearl Starches • Douglas Modified Starches • Douglas Dextrines • Douglas Oxidized Starches

"LET DU PONT IMRON(TM) FLOOR FINISH HELP YOU SLASH MAINTENANCE COSTS!"

"Every maintenance dollar you save is money in the bank," says Du Pont Technical Representative Gene Drake. "Which is why Du Pont finishes are so often specified for difficult maintenance problems.

"You get more than quality paints when you specify Du Pont. You get finishes chemically engineered to do a specific job. Take our IMRON(TM) Textile Floor Finish, for example. In actual on-the-job tests, IMRON has delivered up to 3 times the durability of conventional floor seals. A single package, oil-free urethane clear, IMRON possesses wearability and protective characteristics not found in alkyd, phenolic or epoxy floor varnishes.

"But that's just part of the story. To finishes that are proven and right for the job, Du Pont adds experienced technical help. We'll go right into your mill or plant for a firsthand analysis of your problem. Then, drawing on our own experience and training, we can help you develop a step-by-step program geared to deliver lowest cost per square foot per year!"

Gene Drake, with over 20 years in the field, typifies the men who make up Du Pont's Technical Service Group. Why not call the Du Pont district sales office in your area, and learn how you can slash floor maintenance costs. For detailed information on IMRON Textile Floor Finish, clip and mail the coupon today.

E. I. du Pont de Nemours & Co. (Inc.)
Finishes Division, Department TI-
Wilmington 98, Delaware

Please send me, without obligation, fact-filled technical bulletin on IMRON.

Name _____ Title _____

Company _____

Address _____

City _____ Zone ____ State _____

MAINTENANCE PAINTS

DU PONT

BETTER THINGS FOR BETTER LIVING ... *THROUGH CHEMISTRY*

For further information use Handy Return Card, Page 173

Why Gates Lug Straps last longer... insure smoother operation

Super Tex-Hide Lug Straps

Users report up to five times longer service on their heaviest looms from Super Tex-Hide than from any other strap.

New Thin-Tex Lug Straps

When extreme flexibility and much lighter weight are needed, Thin-Tex Lug Straps give up to 25% longer life than ordinary straps... and smooth out loom operation.

Because of the great strength of Tex-Hide—a product of Gates *Specialized* Research—the block can be molded into the strap without the use of bolts or rivets. As a result, straps are streamlined and light in weight.

Yet, because of their superb resilience, they give longer service, and smoother operation, *than any other strap you have ever used.*

2 big advantages of Gates Tex-Hide Lug Straps

1 Tex-Hide Lug Straps combine great strength with unsurpassed resiliency. They soak up blows and shocks *without taking any permanent stretch.*

2 Further, the great resiliency insures long life for *all parts* of the picking motion, and gives extended periods of operation *without any strap adjustments.*

Gates Distributors are in the YELLOW PAGES

The Mark of Specialized Research

The Gates Rubber Company

Denver, Colorado

Gates Rubber of Canada Ltd., Brantford, Ontario

Gates®

TPA 902

Take-up Roll Coverings
Card Bands
Cone and Evener Belts
Spinning Frame Drives

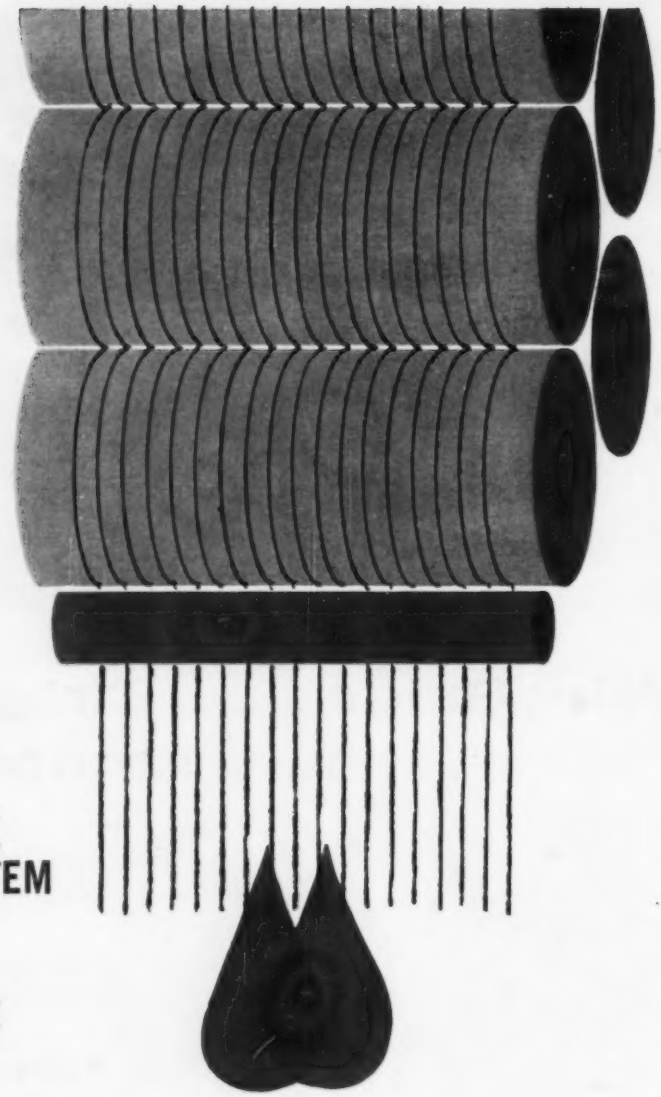
Reversible Pickers

Tex-Hide Harness Straps

Tex-Hide and Vulco Loop Pickers

4-in-one Check Straps
Multi-Check Straps

Gates Textile Accessories



NEW MOISTURE CONTROL SYSTEM GIVES EXTRA-FAST RESPONSE FOR HIGH-SPEED SLASHERS

The new Honeywell *Moist-O-Graph IV* Control System delivers the extra-fast response needed to effectively measure and control regain of yarn on today's high-speed slashers.

Heart of the system's fast response is the new DPP (*Deviation Proportional Pulse*) Control Unit. By employing a new correcting technique, the DPP unit overcomes the production problems usually encountered with high-speed slashers equipped with conventional moisture control units.

In conventional systems, when the moisture deviates from the desired value, the control unit sends a correcting pulse of a fixed duration to the motor controlling the speed of the slasher. If, after a preset interval, the moisture content has not returned to this desired value, another correcting pulse—still of a fixed duration—is sent. This is repeated until the desired regain is re-established. On high-speed slashers this means that a lot of yarn races through the machine before the control unit can effect the proper regain.

With the DPP unit in the *Moist-O-Graph IV* system, correcting pulse signals to the motor are of a *duration directly proportional to the magnitude of the deviation* from the desired moisture content. The control unit quickly adjusts the slasher speed before any appreciable amount of yarn goes by. The desired per cent regain is held for practically the entire run.

For specific details on how the new *Moist-O-Graph IV* Control System can improve *your* high-speed slasher operation, contact your nearby Honeywell textile field engineer. He'll be glad to examine your production requirements, make detailed recommendations, and provide supervision for the complete control installation to ensure optimum performance. MINNEAPOLIS-HONEYWELL, Wayne and Windrim Aves., Phila. 44, Pa. In Canada, Honeywell Controls, Ltd., Toronto 17, Ontario.

Honeywell

First in Control

SINCE 1906

HONEYWELL INTERNATIONAL Sales and Service offices in principal cities of the world. Manufacturing in United States, United Kingdom, Canada, Netherlands, Germany, France, Japan.

For further information use Handy Return Card, Page 173

CHARLTON WOOLEN COMPANY USES

CHARLTON CITY, MASS.

HERR "M" TYPE CONICAL RINGS

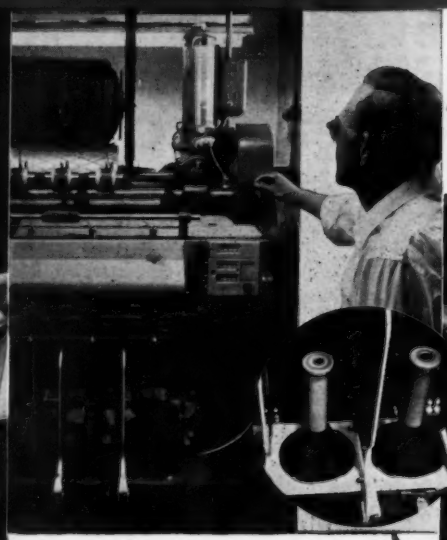
WITH AUTOMATIC PRESSURE LUBRICATION

For Better Oil distribution (minimum amount)
— on the path of the traveler

No oil scattering
— on the machine to create maintenance problems
— on the yarn to degrade quality

Benefits

LONGER LIFE OF RINGS AND TRAVELERS
HIGHER SPEED OPERATIONS
IMPROVED PRODUCT
REDUCED OPERATING COST



With Herr "M" Type Rings and Controlled Automatic Pressure Lubrication.
"YOU DON'T HAVE TO DEPEND ON THE TRAVELER TO SPREAD THE OIL" says Bob Gard.

Bob Gard, who is overseer of spinning, inspects frames that have been in operation for almost three years.

Illustrations show one of the modern installations at Charlton Woolen Company, Charlton City, Mass., manufacturer of coatings and snow suiting fabrics.

Here's how the system operates: Herr "M" type conical rings contain an oil reservoir running completely around the ring. From this reservoir, seams carry the oil by capillary action to the top and side bearing surfaces of the ring so that the paths of the traveler are continuously lubricated...but with a minimum of oil.

The reservoir is supplied with oil by an automatic pressure system that can be set to give just the right amount of oil . . . eliminating troublesome waste.

After the pump cycle has been established, no supervision is needed. Higher speeds and improved products are possible.

HERR MANUFACTURING CO., INC.

310 FRANKLIN STREET • BUFFALO 2, N.Y.

For Spinning and Twisting Worsted • Woolen • Rayon • Nylon • Orlon • Fiberglass and Blended Yarns of all Types

SHORTS & REMNANTS

(from page 36)

"A strong speaker who really *sells* his ideas."

Big mouth.

"Conscientious? I can't tell you how many times I've seen him take work home nights or on weekends."

He can't get organized.

"He's volunteered to serve on most of our management committees."

Afraid to make his own decisions.

"He's at his best when handling the broad outlines of a situation and delegating the details."

He can't add.

"A great believer in face-to-face communications, rather than memos and reports."

He can't spell.

"He had good command of the job, considering his age."

Too young to cut the mustard.

"I believe he's thinking in terms of $25,000."

He'll jump at seventeen.

"I'm sure you'll find him capable of handling *any* job you have in mind."

We're glad to get rid of him.

Another Textile Author

Add another to the list of textile men who write science fiction as a sideline (Agnew Bahnson was the first). This time it's **Michael Erlanger,** board chairman of Erlanger Mills Corp.—that is, if his newly published book can be called science fiction.

The title of the book is "Silence in Heaven" (from Revelations 8:1), and whether it is science fiction or an allegory the reader can determine for himself. The substance of the book is the experience of a handful of people left on earth after a great catastrophe (whether this was man-made or whether God simply became weary of the botched affairs here is never spelled out).

The book was published simultaneously by Atheneum Press of New York and Longmans, Green & Co. of Canada.

► We just learned that **A. Moody Burt** recently celebrated 50 years of service to the textile industry, and we'd like to wish him well in the next 50. Moody graduated from Georgia Tech in 1911, and is now selling for Putnam Chemical Corp.

PERSONAL NOTES

Abraham Feinberg, chairman of the board of directors of Kayser-Roth Corp., recently received the honorary degree of Doctor of Laws from Brandeis University.

Albert Malick, president of Emkay Chemical Co., was recently elected president of the New Bedford Institute of Technology Alumni Association.

Antel Varas and **Alex Mumford** have been elected vice-presidents of Wunda Weve Carpet Co. Simultaneous with these promotions, **J. C. Summerell** was elected to senior vice-president and sales manager, and **W. W. Pate, Jr.,** was named vice-president and general manager.

Louie M. Saxon, formerly assistant superintendent of Hyde Park Mills, Inc., Covington, Tenn., has resigned to accept the position of manager of Herron Yarn Mills, Memphis, Tenn.

Earl W. Breyman has been elected a vice-president of Caron Spinning Co., Rochelle, Ill. Mr. Breyman will be in charge of the hand knitting yarns division.

Richard T. Kropf has been elected president and chief administrative officer of Belding Heminway Co., Inc., succeeding **Fred L. Johnston,** who has retired.

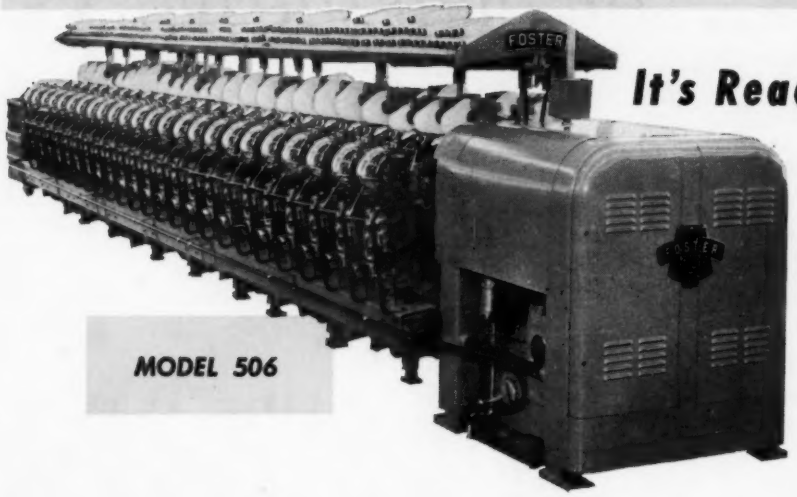
In a realignment of executives at Collins & Aikman Corp., **Donald F. McCullough** has been elected president and chief officer. **Ellis Leach** has been elected chairman of the board of directors, and **Robert M. McCullough,** executive vice-president of manufacturing, has assumed additional duties as chairman of the executive committee. **Albert R. Jube,** who has retired as chairman of the executive committee, has become vice-chairman of the board, and **Robert M. Stroker** has been named a vice-president.

G Blair Gordon, president of Dominion Textile Co., Ltd., has been elected chairman of the board of directors. **F. R. Daniels,** vice-president and managing director, has been named president. Edward F. King, vice-president of sales, has become senior vice-president.

Joe Grant has been appointed per-

Continued on page 176

FOSTER MODEL 506 AUTOMATIC WINDING MACHINE



It's Ready! It's Selling!

Additional machines will be shipped, beginning this September, to such progressive mills as A. M. Smyre Manufacturing Company, Ranlo, N. C., The Russell Manufacturing Company, Alexander City, Ala. and Swift Spinning Mills, Inc., Columbus, Ga.

Firestone Synthetic Fibers Co., Hopewell, Va., and E. I. Dupont de Nemours & Co. of Seaford, Md., have also placed orders for the Model 510, another version of the 500 series.

THE FOSTER MODEL 506 BENEFITS YOU IN 8 WAYS:

1. Increases operator productivity by 50%.*
2. Winds at twice the speed of our manual winder.
3. Requires less floor space per pound of yarn produced than our manual winder.
4. Prevents wild yarn (butterflies), tangles, bobbin rings, crossed ends, uneven package density and rough yarn.
5. Electric size stop breaks back yarn, eliminating gauging of package diameter by hand.
6. Produces any type of open wind putup, including a steep taper (9°36′) knitting cone up to 14″ in diameter.
7. The Model 506 cone is an even better package than the Model 102 cone (standard for the sales yarn market for many years).
8. Investment required is no more than for our manual winders with same capacity and similar features.

**Substantiated and documented in mill tests, under production conditions.*

AUTOMATIC FEATURES

Only those operations which will NOT endanger yarn or package quality have been automated. These include threading up, slubbing and cleaning, disposal of empty bobbins, gauging full cones, donning full bobbins and doffing empty bobbins.

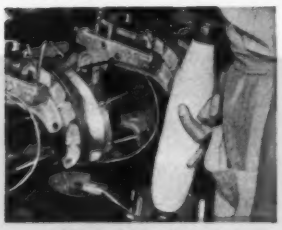
SPEEDING UP MANUAL OPERATIONS

To keep the mill investment required within practical limits and to assure top yarn and package quality (which is so vital to sales yarn spinners), donning and doffing of cones, providing the bobbin supply and knot tying are still done manually. However, providing the bobbin supply and tying knots have been so simplified that altogether they require only fractions of a minute. Wild yarn, tangles, bobbin rings, crossed ends, uneven package density and rough yarn (which are unavoidable at times with automatic knot tying) are definitely prevented.

YOU CAN STILL GET EARLY DELIVERY

We will put 1,000 additional spindles of the Model 506 into production in December for delivery early next year. If you want early delivery, order NOW!

MANUAL OPERATIONS WHICH TAKE ONLY FRACTIONS OF A MINUTE AND PROTECT YARN QUALITY



Dropping bobbin in chute.

Tying knot with standard high speed knotter and testing — all with left hand.

Restarting spindle with right hand.

266-1

FOSTER MACHINE COMPANY

A YARN WINDER FOR EVERY PURPOSE

Westfield, Massachusetts, U. S. A.

Member of American Textile Machinery Association

SOUTHERN BRANCH — Route 85, Belmont, N. C. • CANADIAN REPRESENTATIVE — Ross Whitehead & Co., Ltd., 2015 Mountain St., Montreal, Que. and 100 Dixie Plaza, Port Credit, Ontario • EUROPEAN REPRESENTATIVE — Muschamp Textile Machinery (Sales) Limited, Eider Works, Wellington Road, Ashton-under-Lyne, Lancashire, England • REPRESENTATIVE IN MEXICO — Carlos Rios Pruneda, Av. Juarez No. 145 Desp. 17, Mexico 1, D. F.

All over the world

150 ANNÉES
AU SERVICE
DE L'INDUSTRIE TEXTILE

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GUEBWILLER - FRANCE

NSC

For further information use Handy Return Card, Page 173

Only the Uster Varimeter examines lap inch by inch to indicate irregularities

One inch of bad picker lap will make 650 yards of 30's yarn with excessive count variation. The simplest and most effective means of controlling yarn size is inch by inch measurement of the picker lap. The Varimeter enables an accurate tracing and subsequent elimination of picker faults.

The Varimeter is versatile in that it can be mounted on the picker or on an unwinding device located in the picker room or in the laboratory. Irregularities are charted via the Uster Evenness Tester located either in the picker area or in the lab at the option of the mill.

USTER

For more details on the Varimeter contact:

USTER CORPORATION, CHARLOTTE 8, N. C.

SALES OFFICES: Charlotte, N. C.

Canadian Sales Office: Hugh Williams & Co., 27 Wellington St. East, Toronto 1, Ont.

Picker Overhauling Is Simple
When You Depend On . . .

Aldrich Repair Service

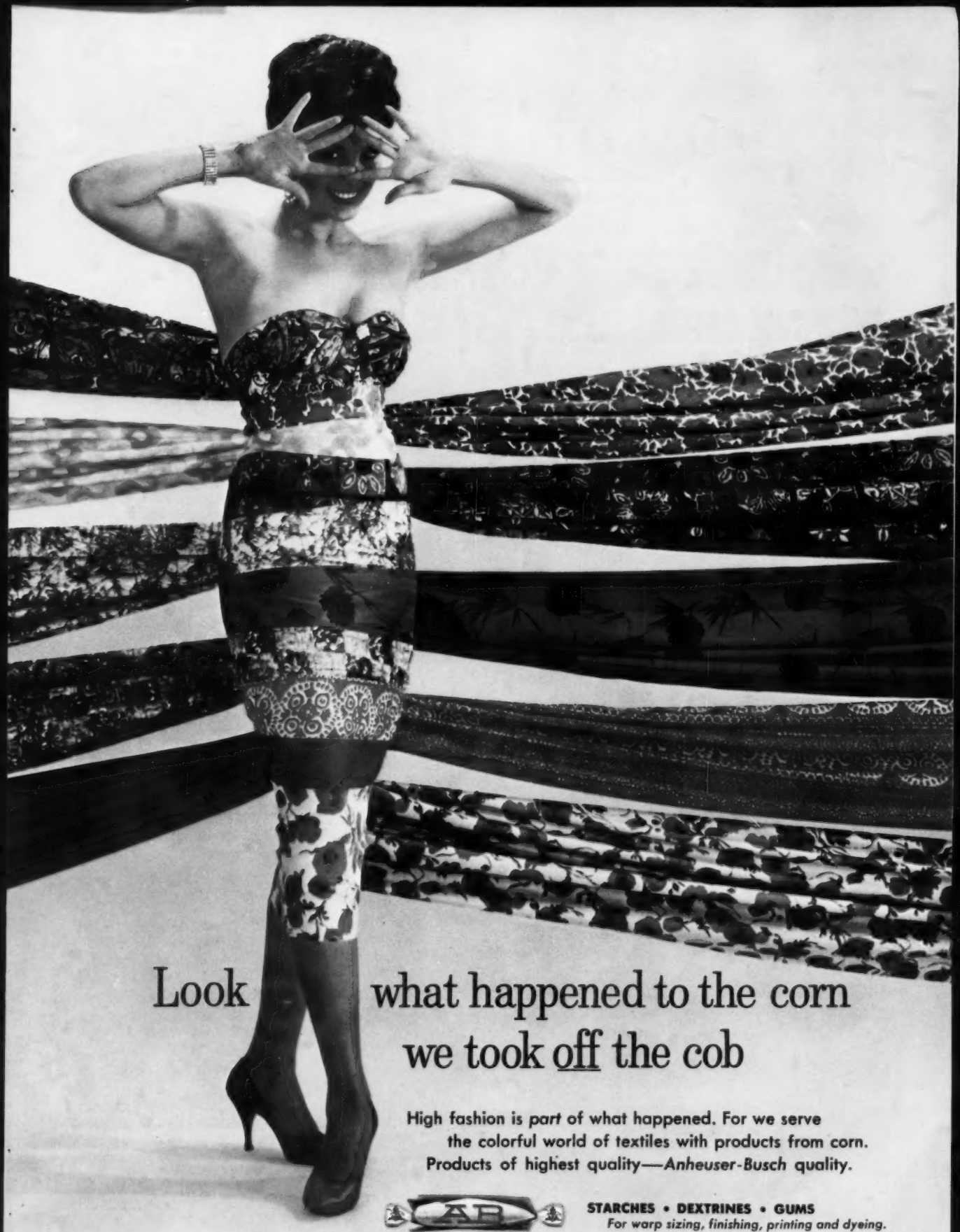
We furnish skilled men for reworking pickers, and can deliver to these men any needed parts within 24 hours in most southern states, and within 48 hours to almost any cotton mill in the United States. This makes thorough overhauling a simple matter. Anything needed for a good job can be had at once, while the machine is down for repairs.

If you do your own overhauling, this speedy delivery service is just as valuable. You don't have to wait for repair parts — they are there when you want them.

We manufacture and install complete blending, opening, and picking systems for cotton and synthetics, and cleaning systems for cotton.

Aldrich Machine Works

Greenwood, South Carolina



Look what happened to the corn we took off the cob

High fashion is *part* of what happened. For we serve the colorful world of textiles with products from corn. Products of highest quality—*Anheuser-Busch* quality.

AB

STARCHES • DEXTRINES • GUMS
For warp sizing, finishing, printing and dyeing.

ANHEUSER-BUSCH, INC., Bulk Corn Products Division, St. Louis, Missouri

MOUNT HOPE HAS THE MOST COMPLETE LINE OF WEB CONTROL EQUIPMENT IN THE INDUSTRY

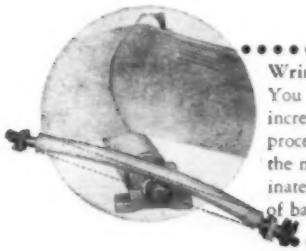
web control NEWS

Volume 1, Number 2

A Report from one company on the state of the art of web control:

today, there's almost NO excuse for SECONDS, RERUNS, IMPERFECT CLOTH

Each year, thousands of web control problems are solved by Mount Hope Engineers. Some are simple and are are solved quickly and economically; others are complex and require sophisticated equipment and engineering know-how. In almost every case, the investment in web control equipment pays for itself in a matter of months (sometimes weeks) out of direct savings. Elsewhere on this page is information on several of our most productive items. *For more information on any of the products listed on the bottom of this page, contact the company. For immediate help on any web control problem contact Mount Hope or your nearest Mount Hope Engineer.*



FOR SIMPLE PROBLEMS:

●●●●● FREE-WHEELING EXPANDERS to Prevent Wrinkles, Baggy Centers, Loss of Width and Distortion. You can use Mount Hope FREE-WHEELING EXPANDERS to increase the efficiency and economy of practically every cloth processing operation! For example, when located in front of the nips of mangles, calenders, or washers, the EXPANDER eliminates the danger of creases being squeezed into the cloth. Ahead of batching operations it keeps rolls smooth and distortion-free.

● VARI-BOW EXPANDERS, for Greater Flexibility, are adjustable with machines running at full speed.

FOR MORE COMPLEX PROBLEMS:

●●●●● BATCHER EXPANDER, air or manually controlled, eliminates wrinkles as goods are batched up. It can be adjusted to control the firmness or density of the roll of goods. The EXPANDER is designed to be always in correct relation to the travel of the web as the diameter of the winding roll increases.

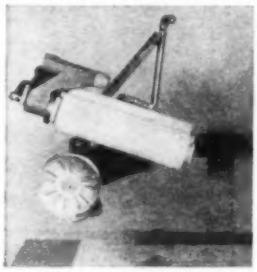
●●●●● MULTI-BAR ADJUSTABLE EXPANDER is a quick and easy means of adjusting the amount of widthwise spreading from maximum to minimum. Extremely useful for various grades of cloth with widely-differing width-spreading characteristics. Consists of 3, 5 or more FREE-WHEELING EXPANDERS and one lead-on roll, all mounted on the same bracket.

●●●●●● SLACK SELVAGE ELIMINATOR. Placed ahead of coaters and shearing machines, the Mount Hope SLACK SELVAGE ELIMINATOR feeds fabric smoothly, prevents uneven coating, cut selvages, and poor shearing. Two FREE-WHEELING EXPANDERS and a swinging, compensating roll, spring-loaded against the entire cloth width, removes slack from either selvage, at all times.

Now . . . WEFTOMATIC, The Ultimate in Bowed & Skewed Weft Straightening Equipment

Fabric finishers now may correct bowed and skewed fabrics automatically, no matter how many diverse weights, blends and weave characteristics they may be called upon to handle.

For the first time, both electromechanical and optical detection methods have been integrated with Mount Hope's well-known and proved COMPAK WEFT STRAIGHTENER. The new system is called WEFTOMATIC. Using it, one major textile printer has achieved a four-fold production increase in the processing of as many as 25 different weight and quality synthetics, synthetic blends and natural fabrics.



New Low-Cost Precision Guiders Added to Line

Two new models of the Mount Hope PRECISION GUIDER will mean cost-savings for textile firms whose processes do not encounter severe acid conditions. The new units—Models "A" and "B"—perform in exactly the same manner as the standard Model "S" STAINLESS STEEL GUIDER, assuring accurate lateral alignment of materials of every weight.

EXTRA *The Mount Hope System is saving many textile firms hundreds and thousands of dollars.*

If you would like an engineering survey designed to uncover ways and means of saving money in your cloth handling operations, contact us for details.

MOUNT HOPE MACHINERY COMPANY
15 FIFTH STREET, TAUNTON, MASS.
Plants: Taunton, Charlotte and in England.
Sales Engineers in Principal Cities.

Mount Hope Makes the Following Web Control Equipment for the Textile Industry

- Free Wheeling Expanders
- Vari-Bow Expanders
- Automatic and Push Button Bow and Skew Weft Straightening Equipment
- Non-Stop, Twist-Free Cloth Openers
- Precision Guiders
- Floating Roll Guides
- Selvage Uncurlers
- Continuous Roll Feeds
- Tension Controls
- Textometer (Moisture Control)
- Web Viewer
- Other Specialized Equipment

The following are Registered Trade Marks: Mount Hope; Bow Skew Liner; Free-Wheeling Expanders

Mount Hope MACHINERY COMPANY

For more information on the products mentioned above or on any cloth handling problem, contact Mount Hope or check the Reader Service Card. Please write in on the card the product(s) you are interested in.

For further information use Handy Return Card, Page 173

Textile Industries
FOR SEPTEMBER 1961 PRESENTS....

Wet Processing — A Progress Report

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The High Cost of Playing It Safe

IN THE free-for-all competition that the finishing industry is heir to, the prerequisites for success are many. It would seem, however, that getting a share of new business should begin with practical research and development. But some skeptics point out that trying "something new" on a practical scale is costly, and the odds against a return on investment are high. "Playing it by ear," as the jargon of the day expresses it, costs nothing.

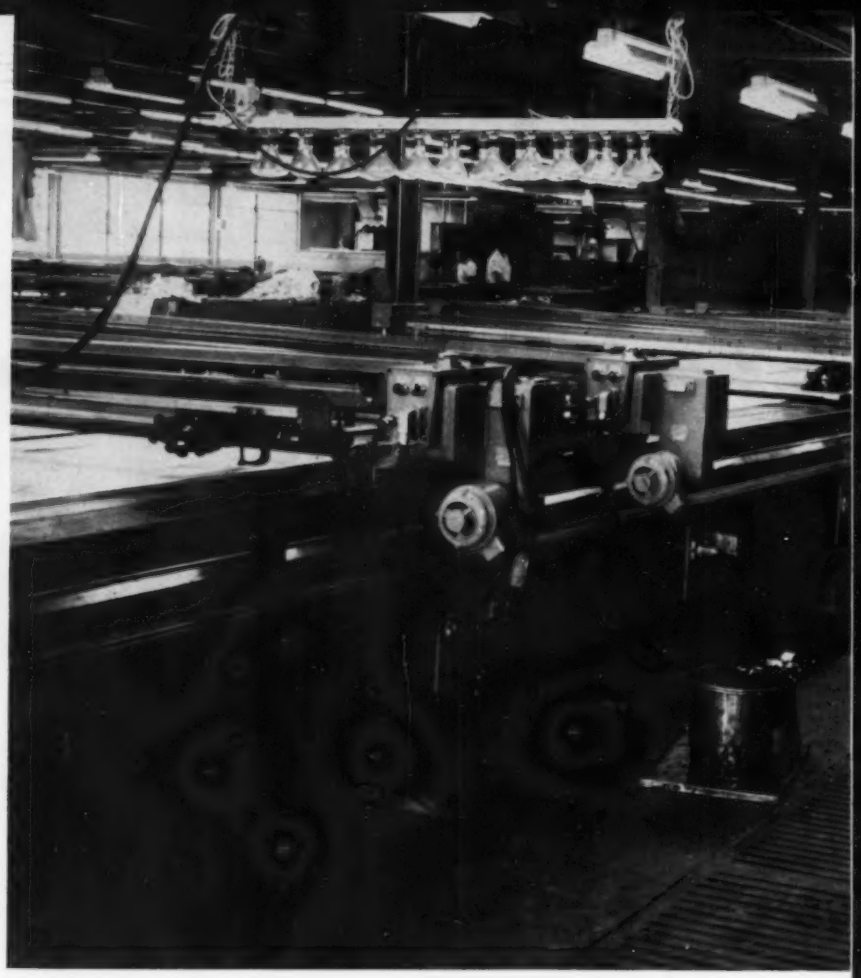
But the recent history of technological accomplishments, which reflect new and complex scientific concepts, bears out convincingly that this supposedly safer policy is not the easy short cut to profits. For the same amount of practical development work must still be done—but in far less time. This inevitably results in frantic appeals for technical assistance, and quite possibly in a search for the "right man."

In the long run, screening new developments as they come about is the least costly procedure, even though it requires a larger technical staff. And once a new process has been adopted and introduced into the plant, development work must begin, to insure quality at a competitive price. Thus, the emphasis shifts in an orderly way from getting a share of new business to holding onto it permanently.

It is in these two critical areas of finishing that the articles which follow are concentrated. Readers will find practical discussion of major dyeing and finishing developments, including a continuation of the series begun last year on "Printing by Hand and by Machine." An article by an executive of a consulting engineering firm rounds out the section with clear-cut measures for reducing costs in finishing.

Taking advantage of new marketing opportunities and adopting sound cost-cutting measures are full time responsibilities these days. It is unlikely that competition will ease up to offer management even a short breathing spell for complacency.

PROGRESS REPORT: AUTOMATIC SCREEN PRINTING



by Stanley M. Suchecki
Associate Editor

Exclusive

LAST YEAR TEXTILE INDUSTRIES presented a survey of the number and distribution of automatic screen printing machines in the world.* This survey revealed that in European nations, in particular, a most rapid growth of this industry has occurred. Since the first automatic screen printing machine was built in Austria, in about 1940, the number of installations in Europe has grown to about 275 as of last year, contrasting markedly with only about 30 installations in the United States.

A characteristic of the industry's growth on the Continent, and quite possibly in Great Britain, is that a large proportion of roller printers has entered the field. One machinery manufacturer reported a year ago that 35 machines of his make had been installed in roller printing plants throughout Europe. In the U.S., on the other hand, the distribution of machines among roller printers has been low. For the most part, the field is dominated by plants engaged exclusively in automatic screen printing, though some of them have continued their table printing operations.

Several reasons have been suggested, in the course of preparing this article, for the higher growth of the industry in Europe. One obvious reason has been the consumer's desire for exclusive ownership of smartly styled apparel and decorative fabrics. This demand has in turn created styling trends which call for a higher number of colors and color combinations per design to provide the required styling diversity. Thus the need evolved for an economic and sound method of printing short runs.

But it can also be said that the American consumer has an equal taste for exclusive styling. And automatic screen printing, it is recognized, offers the most economical method of printing shorter yardages. Moreover, such a method of printing should have some appeal since there has been a trend in roller printing markets toward shorter runs, which are often dangerously close to break-even points. Yet despite such favorable conditions, there has been only a barely perceptible movement of roller printers into the field.

Why Not in the U.S.? Some explanation for such a hesitant attitude might be gained from a study of European and American markets, and of the conditions that govern them. While consumer demand for exclusive styling exists in both regions of the world, there is first of all a notable difference in buying habits, particularly in

*See TI for September 1960, page 124, "World Survey of Automatic Screen Printing Machines."

Note: The term "automatic screen printing" as it is used in this article applies to machines which utilize an endless belt and screens for printing on uncut fabrics.

women's apparel markets. The Continental woman, it is said, is less inclined to acquire the large wardrobe of the American woman, preferring a more frequent wearing of exclusively styled garments, constructed for many seasons of wear.

The American woman, by contrast, has been educated to expect seasonal styling obsolescence. And since enormous yardages of smartly styled fabrics are readily "lost" in the widely scattered markets of this country, there is some assurance of exclusive ownership. The roller machine, therefore, meets most American demands quite adequately, while in the smaller-populated European nations, the automatic screen machine finds wider use.

Not the smallest reason for a healthier and growing industry in Europe, however, is a favorable price structure, according to one observer, which provides a suitable margin for profit and amortization of equipment. The initial cost of investment, incidentally, in a machine of better design, equipped with dryer and auxiliary facilities, can reach $90,000 to $100,000. Since operating speeds are relatively low and fixed, the automatic screen machine must therefore be devoted to markets which can absorb the higher cost of printing.

Thus, in markets calling for highly styled fabrics, in response to the demands of the wealthy and discriminating, automatic screen printing will continue to grow in this country. This is the view of a roller printing plant executive. But in lower price markets, he points out, where the retail price ranges between 39¢ and 69¢ per yard, the machine is at a disadvantage because it has not yet approached roller printing speeds, except in patterns of large repeat.

In drapery markets, where automatic screen printing has already made large inroads, the opportunities for growth are decidedly better. There are definite advantages to be gained here. Reorders of small yardages can be printed more economically than by roller, thus reducing the need for high initial yardages and for carrying high inventories. And there is the additional advantage that patterns of large repeat, styled in a high number of colors, can be more economically printed at a much lower cost of engraving.

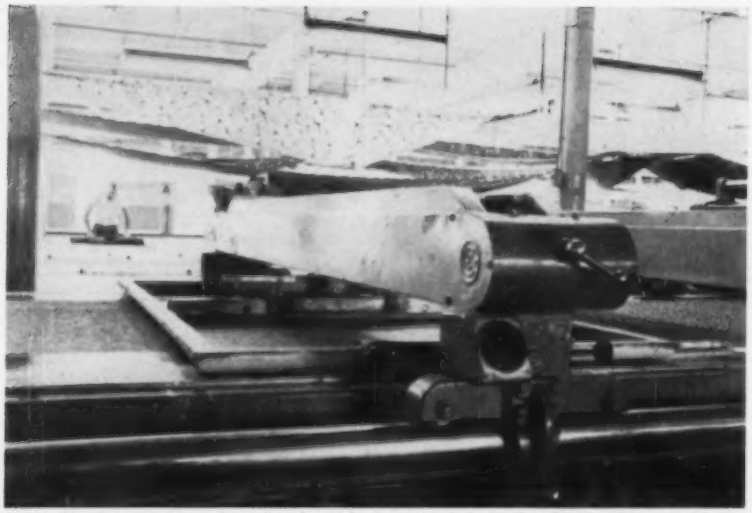
Some authorities in this country contend that small yardages can be most economically printed on the hand screen table since detection of defects is quicker, resulting in only small yardages of poor quality work. And with competent, well-trained personnel, production can be maintained at a high level. But it has long been established that automatic screen printing offers overwhelming advantages, in most cases, with its higher rate of production, lower operating cost, and smaller requirements in space. Hence, the need for automatic screen printing is indicated for production runs beginning at 250 or 500 yards, and for yardages above that until a point is reached when printing by roller machine becomes more economical.

What is the Break-Even Yardage? The exact yardage at which roller printing becomes profitable is not a simple one to establish for the entire industry because innumerable factors influence the cost of printing. Highly styled dress goods patterns can require considerable down-time until good register and exact shade matching are achieved. Therefore, the break-even point may be 10,000 yards and higher in high quality printing, and as low as 7,000 yards for simply styled patterns, of a low number of colors, slated for low-end markets. In either case, the roller machine must be regarded as a unit of high production because the combined costs of engraving, setting up, and operating are enormous.

It is the potentially high operating speed of the roller machine that becomes a decisive advantage in a comparative cost analysis of the two printing methods. Despite the fact that the cost of printing by automatic screen machine declines tremendously as the production run approaches about 8,000 yards, becoming attractive by roller printing standards, its speed of printing remains fixed. At this point in a production run on the roller machine, a peak operating speed has usually been reached which is several times greater. By necessity, then, the profit picture for automatic screen printing is most favorable for the shorter runs.

Automatic screen printing can indeed be profitably utilized by roller printers and in a number of ways. It can be used primarily for striking off new patterns; or it can be used to produce exclusively styled patterns in short yardages, of small and large repeat; or it can be devoted to short yardages in repeats and patterns that can be duplicated on the roller machine should increased market demand occur.

There is also an opportunity to diversify into discharge and resist styles of printing, with no additional investment in equipment, since dyeing facilities already exist. And the technical know-how acquired in resin finishing can likewise be utilized. There is therefore unusual opportunity for a distinctive styling to evolve.



Automatic screen printing has already made large inroads in the drapery fabric field. But some authorities contend that small yardages can be most economically printed on the hand screen table, since detection of defects is quicker, resulting in less poor-quality work.

The automatic screen printing machine requires advancement and positioning of the fabric after completion of each printing cycle; however, a high degree of register is possible.

What is the Ideal Printing Method? Since the selection of printing method is not governed entirely by a single consideration, though admittedly economics is a most important one, it might be instructive to list the commercial methods of printing, and point out some considerations which influence selection. Thereby, a clearer perspective of the automatic screen machine might be gained. The methods of printing are these:

Hand screen printing

Automatic screen printing

Printing on hand screen table with automatic screen printing carriage

Surface or "block" printing by machine

Roller printing

Automatic screen printing on cut fabrics

A popular method of printing glass fabrics is on the hand screen table because a printing surface of desired softness can be readily obtained, and the action of squeegee on fabric is not injurious to the delicate fiber. Another suitable method is on the so-called "surface" printing machine. Here, the color is applied gently to fabric from raised "blocks." But the prints lack a sharpness and reveal heavier colored outlines. This method is nevertheless of some importance in decorative fabric markets because of the unique printed effect that it affords.

For printing flannels, which pose some problems on the roller machine, and for printing terry toweling (both large volume fabrics), the rotary screen machine (of Portugese origin) has been proving successful. (A machine of this type, the Morrison Rotary Screen Printing Machine is described in detail in an accompanying article.) Rotary screen printing is not limited to the above-mentioned fabric qualities, and it offers simplicity of operation and high productivity. Though it restricts styling, because of the soldered seam required to form a cylindrical-shaped screen, it has already gained importance abroad, and interest in it in the U. S. is being renewed.

Another method of printing terry toweling (in cut form, however) is on a modified automatic screen printing machine which utilizes an endless belt and screens. According to Precision Screen Machines, of Paterson, N. J., there are about 30 installations of this company's model throughout the country. This method of printing offers competition to the rotary screen machine, particularly in low yardages; though it requires more personnel for operation. The machine can also print individual garments and other cut fabrics which have a high pile. Its production rate is reportedly high: On 72″ beach toweling, the output reaches 600 towels or 1200 yards per hour; while on a 24″ repeat, an output of 90-100 dozen per hour is reportedly common.

From the foregoing, it must not be construed that the automatic screen machine and the roller machine are not suitable for printing the above-mentioned fabric qualities. Such a statement would be a dangerous generalization. It must be acknowledged, however, that a wide number of printing methods exist from which selection can be made to meet individual economic, printing, and styling requirements.

There is no doubt that the roller machine, if skillfully employed, can best meet the range and complexity of today's styling demands.

Moreover, the precision of intaglio engraving on copper can produce the ultimate in sharpness of mark. But the advantages of the roller machine are not overwhelming, in view of its recognized inherent shortcomings. Accordingly, the automatic screen machine assumes a high position not far behind it.

Unlike the automatic screen machine, the roller machine places limitations on size of repeat, and its consumption of color is high. The multiple crushing action of the rollers, besides, reduces color brilliancy and bloom. Though blotch patterns can best be executed on the roller machine, there are often problems in side shading, resulting in down time for color changes and pressure adjustments.

There are other shortcomings which are beginning to assume greater importance as the textile industry strives to reduce its costs of manufacturing and processing. A reader of TEXTILE INDUSTRIES brought out one of the more serious ones in a letter to the editors.** He cited "color leak-in" as being one of the most difficult problems to overcome. While the lint doctor is in many cases successful in keeping rollers clean, there are instances when the only alternative is to use a "reverse" brush. But even this technique does not provide the solution; and furthermore, the reader points out, printing speed must be drastically reduced to prevent color from splashing the fabric from the rear side of the box.

The shortcomings of the automatic screen machine also stem from its inherent design, which requires advancement and positioning of fabric after completion of each printing cycle. That is not to say that accuracy of register cannot be attained; for a high degree of accuracy made the automatic screen machine a reality in the first place. But certain patterns, such as the perennially popular stripes, are difficult to execute with straight-line precision.

In recognition of this problem on the automatic screen machine and because of the high cost of printing stripes on the roller machine, there has been a renewed interest, according to reports in the field, in simpler methods of printing stripes. One method reportedly utilizes a trough, divided into as many compartments as there are stripes in the pattern. The compartments serve as reservoirs for the color pastes, allowing the colors to flow onto the fabric by a suitably devised mechanism.

Still another method of printing stripes, though of questionable merit, is on a modified set-up of the roller machine. The doctor is positioned on the roller at such an angle that it also serves as a color reservoir, eliminating the need of a color box. This method has ad-

Continued on page 77

Automatic Screen Printing Machines, Their Manufacturers and U.S. Sales Representatives

Machine	Manufacturer	U.S. Representative
Buser	Fritz Buser AG Wiler, Switzerland	Jungfrau, Inc. 227 East 56th St. New York 22, N. Y.
Comerio Ercole	Comerio Ercole SpA Casella Postale 342 Busto Arsizio, Italy	None
Ichinose	Toshin Kogyo Co., Ltd. C.P.O. Box 367 Osaka, Japan	Edward S. Rudnick P. O. Box 244 New Bedford, Mass.
Meccanotessile	Meccanotessile di Fontana & Lanfranconi Via Pannilani 1 Como, Italy	Regent Textile Machinery Co., Inc. 110 West 40th St. New York 18, N. Y.
Reisinger	Camillo Reisinger Lerchenfelderstr. 54 Vienna 8, Austria	None
Reggiani Meccanofilm	Reggiani Meccanotex SA Quartiere Redona Bergamo, Italy	Lendt & Co. 535 Fifth Ave. New York 17, N. Y.
Stork	Gebr. Stork & Co.'s Apparatenfabriek NV P. O. Box 3007 Amsterdam, Holland	Ernest L. Frankl Associates, Inc. 515 Madison Ave. New York 22, N. Y.
Thorne	Thorne-Brown Co., Inc. Westport, Conn.	Same
Zimmer Screen-printing Automat	Zimmer's Erben KG Waidmannsdorferstr. 115 Klagenfurt, Austria	Sherwin Sales Co. 249 East 48th St. New York 17, N. Y.

World Survey of Automatic Screen Printing Machines

	World		U. S. A.	
	1960	1961	1960	1961
Buser	90	137	16	18
Comerio Ercole	53	146	1	1
Ichinose	70	100	1	2
Meccanotessile	27	30	0	0
Reggiani	82	109	5	7
Stork	101	183	4	4
Thorne	3	3	3	3
Zimmer	32	66	1	1
TOTALS	458	806	31	36

Source: 1960 figures are from TEXTILE INDUSTRIES' "World Survey of Automatic Screen Printing Machines," TI for September 1960, page 124.

1961 figures for the Buser and Reggiani machines were compiled from lists supplied by the manufacturers. These lists gave the mill in which each machine was installed.

The figure for the Comerio Ercole machine was obtained in correspondence with the manufacturer, who stated that "about 146 machines" were in operation.

The U.S. representative for the Ichinose machine reported to TEXTILE INDUSTRIES that 80 machines are operating in Japan and 20 outside Japan, including 2 in the U.S. (1 on the mainland and 1 in Hawaii).

The manufacturer of the Meccanotessile machine, in correspondence with TEXTILE INDUSTRIES, reported that there were " . . . as much as—or even more than—30 screen printing machines in operation in the main European countries, in South America and in Africa."

Manufacturers of the Stork machine gave this breakdown: Europe, 124; Asia, 18; Africa, 13; Australia, 5; U.S.A., 4; Canada and Latin America, 19.

The manufacturer of the Thorne machine reported no change from 1960.

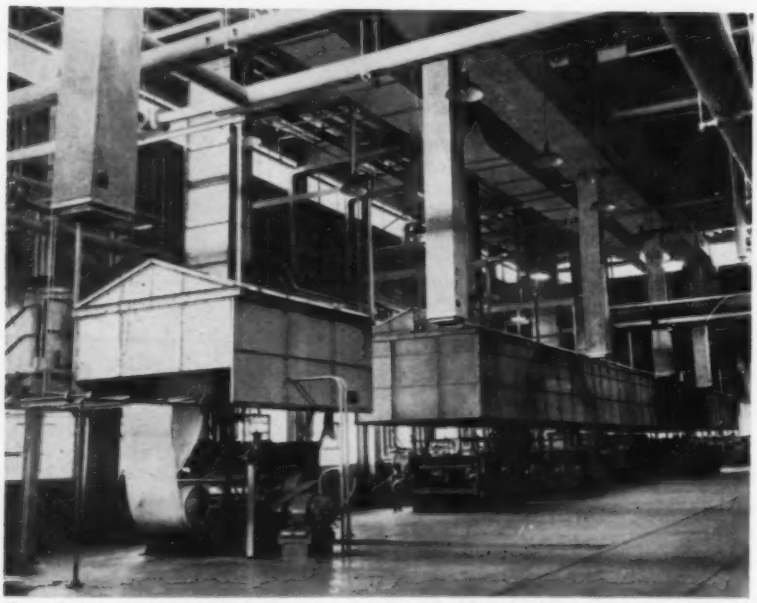
Statistics for the Reisinger machine were not available for either year.

Zimmer gave this breakdown: U.S.A., 1; Latin America, 18; Europe, 46; Africa, 1.

**TI for January 1961, pages 103 and 105.

CUTTING finishing plant COSTS

If your finishing plant is like most, you can save money in some—maybe all—of these eight areas



One of the most neglected facilities in the finishing plant is the ventilating system. As machines are added, more and more air is exhausted, resulting in an imbalance which tends to create a vacuum and to some extent cuts the capacity of all the fans. In this finishing plant, which has a well balanced ventilation system, there is a slight positive pressure.

by C. P. Roberts

Vice-President
Robert and Co. Associates

Exclusive

AS FOREIGN imports cut deeper into the American Market, with no real sign of relief by reduction of quotas in sight, our American finishing industry finds itself faced with far keener competition for the remaining market than ever before in its history. In order to assure survival with a minimum profit, every avenue of cost must be carefully explored for possible savings.

Unit prices of labor, chemicals, and utilities are fixed costs to a large degree; management must take effective measures to see that these and other fixed costs are kept to the minimum commensurate with quality standards. More than this, it must take steps to recover every possible item of waste and reduce seconds in order to survive the foreign onslaught.

Assuming an existing plant which is to remain in its present location, there are basic items which normally affect price, which should be examined for their cost saving potential. In each case, however, the cost of making these savings must be compared to expected savings in order to determine the economic feasibility of the proposed scheme. In many cases the cost of effecting the savings may well rule out the scheme, because of the low return on investment.

Let us consider some of the possible avenues of effecting savings in finishing, not necessarily in the order of their importance in any particular plant:

1. Product flow and in-process handling.
2. Building, mechanical, and electrical facilities, as they affect costs.
3. Control of chemicals, utilities, and supplies.
4. Automation and instrumentation.
5. Centralization of responsibility.
6. Protection of finished product.
7. Experimentation and evaluation of new methods.
8. Education of the employee in his responsibility in cost cutting.

In many instances, plants have been able to show tremendous savings with nominal expenditures in several, and in some cases all, of the categories listed above. Before proceeding or launching a program in any plant, however, management should have at its disposal a clear-cut report outlining step by step in logical order the procedure to follow, accompanied by estimates of capital outlay required and "pay-back" expected.

Careful coordination is necessary to maintain production through the life of each phase of the project. Existing and proposed machinery plans must be superimposed in order to properly plan relocations of equipment while avoiding conflict with machinery and equipment not affected by the program.

Flow and Handling. In addition to the extra labor required to handle goods from process to process, the opportunity for damaging the in-process fabric to such a degree that reruns are required and seconds produced, is greatly increased. In most finishing plants, and more particularly in cotton finishing plants, the numerous routes which various fabrics follow through a plant often make a straight-line flow impossible. If, however, the major product is ar-

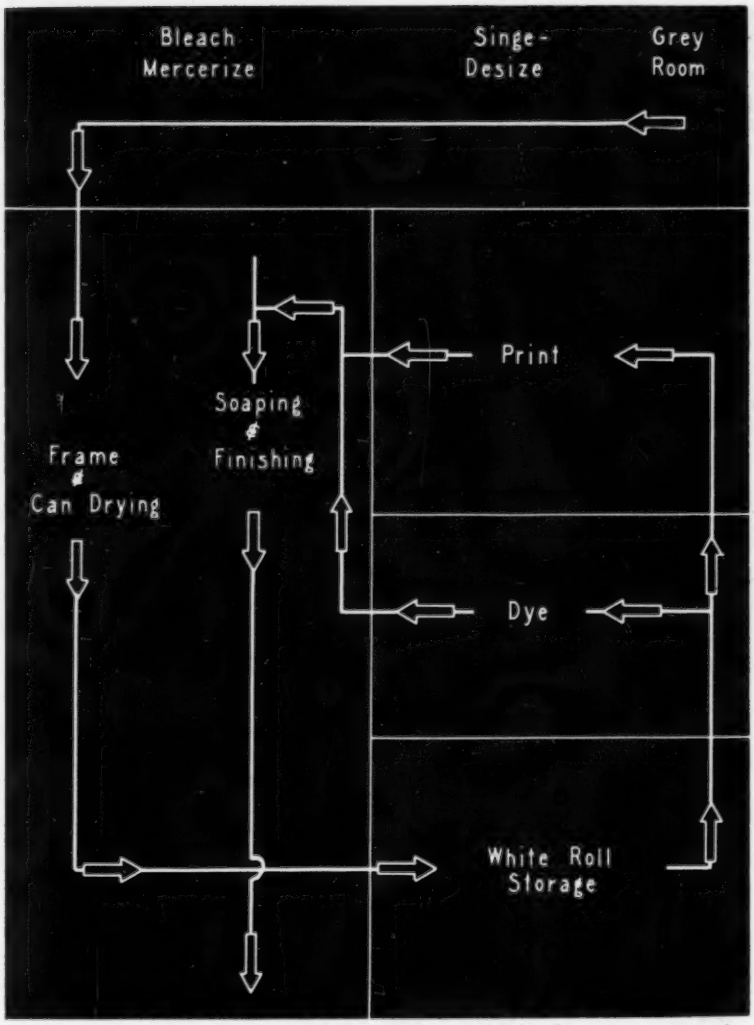
ranged to flow in as direct a route as possible, variations can often be arranged as off-sets to the straight line flow.

Direct flow cannot be pursued to the detriment of other important factors, however. Other considerations which must be kept in mind are departmental grouping of machinery for ease of supervision, grouping of wet and dry equipment for compatibility and waste collection, and grouping to reduce costs of piping and electrical systems. All factors must be considered and evaluated to achieve the most economical result.

Quite often, availability of floor space will require certain compromises which are inevitable, but very few actual cases exist, except in relatively new plants, where vast improvement in product flow and handling is not attainable. By striving to get individual continuous process speeds in line with each other, batching and handling can often be eliminated, and in some cases drying can be eliminated.

Some plants have been able to combine bleaching and mercerizing successfully; many more have combined finishing and curing. Soaping and drying could possibly be brought into line with finishing and curing as well; and in some cases pigment dyeing and resin finishing have been combined successfully. Through the years certain operating speeds have been accepted as standard for many processes, but with more control and larger units within ranges, speeds have been obtained which in some cases are double the standard, with good results.

The "short run" plant will find difficulty in utilizing high-speed equipment; however, most plants which require multiple ranges can allocate the longest runs to the high-speed machinery and thereby get the benefit intended.



Example of offset flow. In cotton finishing plants, particularly, the numerous processing routes which various fabrics follow make a straight-line flow impossible. If, however, the major product is arranged to flow in as direct a route as possible, variations can often be arranged as off-sets to the straight-line flow, as shown in the schematic drawing here.

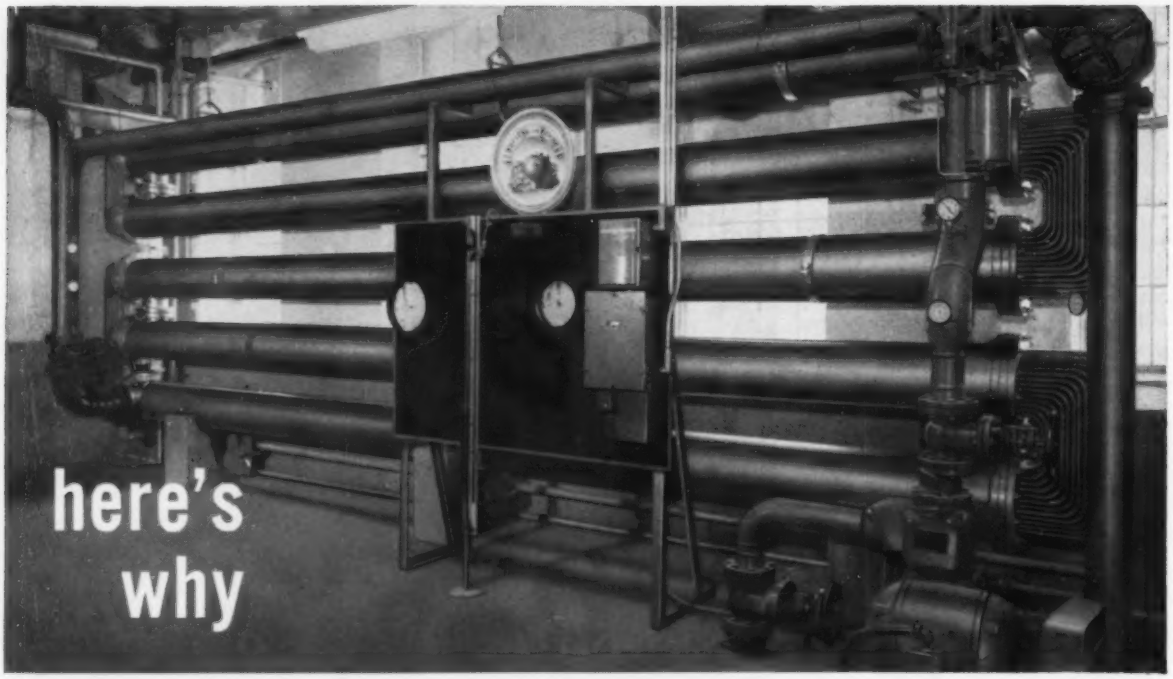
Building Facilities. Not the least item of cost in finishing plants is the maintenance of the physical plant. The existing plant must accept to a certain extent those evils of construction that have been inherited. Still, as walls are removed or replaced, floors replaced, roofs replaced, etc., building maintenance can be kept to a minimum if proper materials and methods are employed.

In the days when a millwright performed maintenance at a relatively low wage the incentive to build more costly, low-maintenance buildings did not exist. With today's high costs of craftsmen, however, it is necessary to take every possible step to keep maintenance costs as low as possible.

As roofs are replaced, a careful study should be undertaken to determine the most suitable decking for the exposure involved. Permanence and U-factor are two prime considerations; however, all too often the strength of the framing governs the selection of the decking. Next, the proper type and thickness of insulation should be determined. Proper application of insulation can save considerable mechanical ventilation in wet areas by keeping down condensation and drippage which causes seconds and reruns. Pitiful, indeed, is the case of a twenty-year roof on a ten-year decking.

Walls and partitions should also be selected carefully for permanence, insulating value, absorption, and adherence properties to provide minimum maintenance.

Floors are a major source of trouble and extreme care should be taken to install good, wear-proof floors when replacement is



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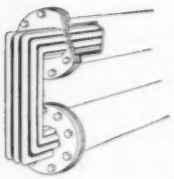

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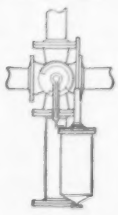

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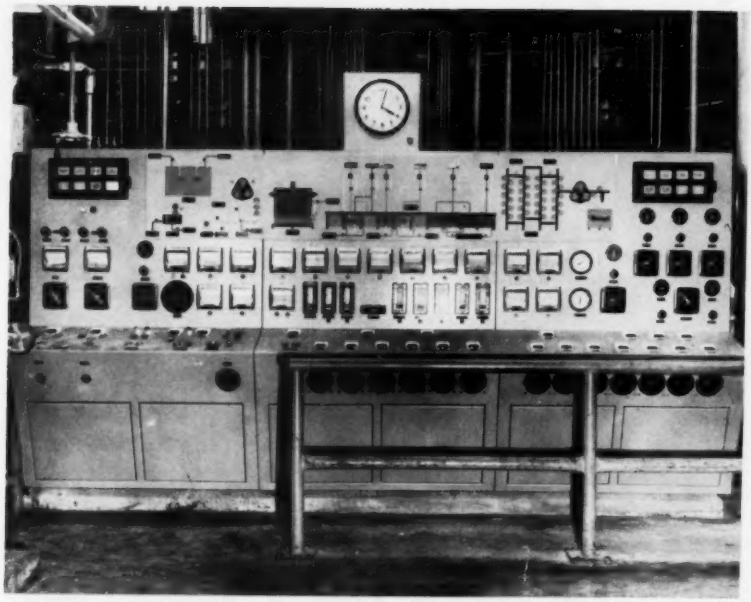


Automation and instrumentation are inseparable partners. Processes are often combined for economical operation; they are controlled by instrumentation, as with this panel, which controls a high-speed dyeing operation. The panel is also equipped with recording instruments, essential for getting data on performance. The panel is located for easy visibility.

necessary. Processes now available can be applied to concrete in the form of toppings which will insure trouble-free floors in most all exposures.

Probably one of the most neglected facilities in the finishing plant is the ventilating system. As machines are added, more and more air is exhausted, resulting in an imbalance which tends to create a vacuum, and to some extent cuts the exhaustive capacity of all the fans involved. This usually results in a slow-down of drying and loss of production.

Air "stolen" through leaky windows and doors is not properly tempered at times and causes condensation, drippage, and related troubles. The well-balanced finishing room will show a slight positive pressure.

Piping systems should be designed to minimize the number of pipes required. Selection of the type of pipe should be made according to the requirement of the pipe and exposure to which it will be subjected externally. Quite often external exposure is overlooked. Also, by properly employing pressure-reducing valves, pipe sizes can be kept to a minimum. Piping should be installed so that valves and controls are easily reached for necessary maintenance.

All electrical apparatus, including lighting fixtures, must be selected for resistance to exposure and ease of maintenance. Motors are extremely vulnerable to chemicals and their selection should be left to those skilled in this field. Engineers should be consulted when selecting motors. In many instances, a program of proper selection and scheduled inspection has cut replacement to a fraction of its former cost.

There is no substitute for good lighting. Many a yard of seconds has been made because of poor light. Lighting standards are obtainable from engineers and should be employed when a relighting program is undertaken.

Control of Supplies. Most progressive finishing plants today have undertaken programs of reduction of waste. An astonishing number, however, still lose considerable potential profit yearly by mixing excessive quantities of dyes and finishing solutions, creating waste during mixing, and losing unmixed chemicals because of negligence or inadequate storage. By centralizing dye mixing, better control can be applied with reduction in waste of dye mixing. Mezzanines are the best answer to this problem.

Heat recovery from waste is rather common today, yet many plants still dump tremendous quantities of hot water that could be saved; first by using flow meters to control the quantity used, and second by reclaiming heat from waste water with heat exchangers. A hot water storage system will cut the peak load on the boiler plant, cut down cycle time, and at the same time act as a reservior for the reclaimed heat. Without control of hot water usage, however, a hot water system may result in overuse and its purpose will be defeated.

When planning a realignment of production equipment, collection of waste water should be considered. Many plants find themselves unable to make this potential saving because they are physically unable to collect the waste water. Another prime reason for this consideration is the imminence of stream pollution control in those areas not now affected. Central collection and reclamation of heat from waste is a step toward waste treatment.

Counterflowing wash water and reuse of water whenever possible, such as turbine cooling water, compressor cooling water, and cooling-can water are definite savings and should not be overlooked.

Recovery of chemicals such as caustic should not be overlooked. Here again stream pollution control often gives added attraction to this type of program.

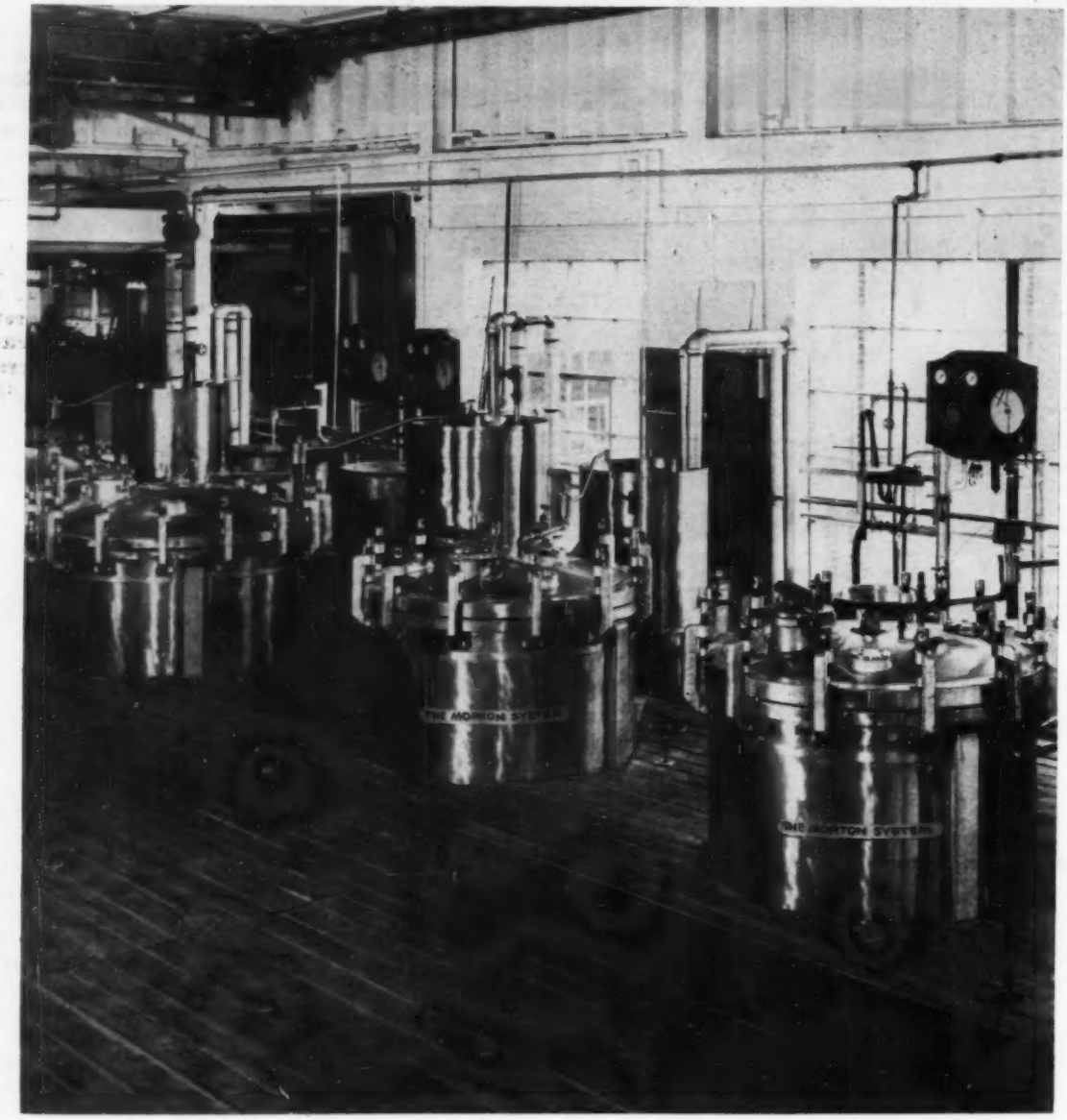
Brine systems can save tremendously in salt waste and in labor. A brine preparation and handling system is not an expensive item, yet many plants still use dry salt.

Other areas of potential savings exist in depth of pans of padders. By keeping the capacity of these pans to a minimum the dump-waste factor can be reduced where perishable chemicals are involved.

Generally, manually controlled values should be installed only where absolutely necessary and then strict supervision should be exercised where habit can result in waste of utilities.

Automation Instrumentation. Much has been said on the

Continued on page 82



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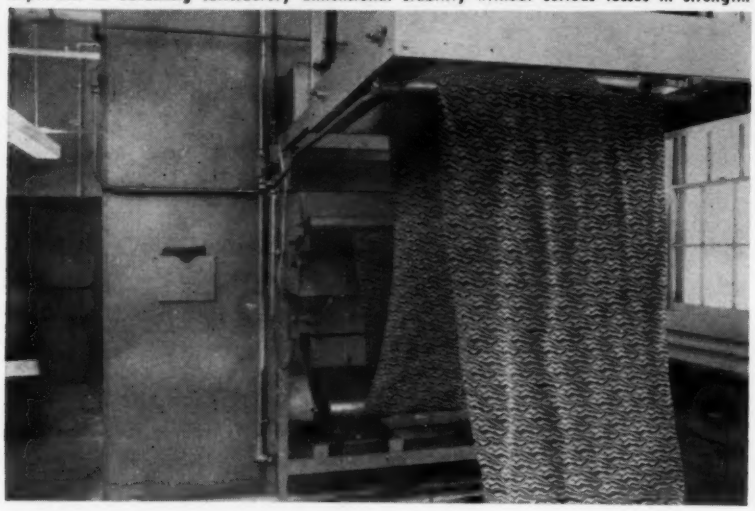
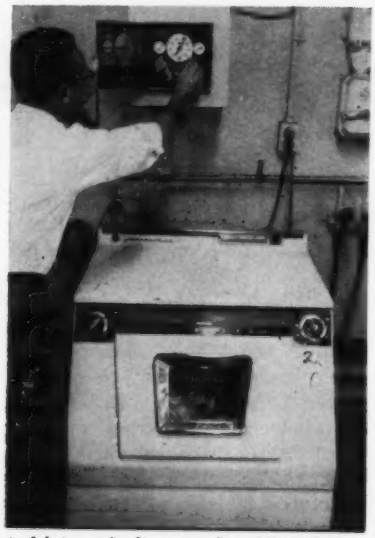
Selecting the catalyst and determining the time-temperature cycle in curing are vitally important in obtaining satisfactory dimensional stability without serious losses in strength.



A Progress Report

by P. B. Roth
and F. G. Hewit
Textile Chemicals Department
American Cyanamid Co.

Exclusive



A fabric with dimensional stability that is not affected by laundering is the chief goal in the resin finishing of cotton knit goods.

Resin Finishing Cotton Knits

NOT MANY years ago the knitted cotton fabric was limited in use primarily to underwear and children's wear. Today, it is used in women's high-style dresses and coats, in men's shirts and outerwear, and in children's apparel. Knitted cottons are also finding use in the home furnishings field, in upholstery and drapery fabrics. Its uses are expected to expand even further within the immediate future as polyurethane foam lamination undergoes further trials.

This transition of a fabric that was styled in a limited number of constructions and patterns, and possessed high shrinkage, to one of high style in which shrinkage is controlled and to which easy-care properties have been added, has come about in a relatively short time. The development of new products, particularly synthetic resins, and the introduction of new machinery and processing techniques have all contributed to the expansion of the cotton knit goods industry. Most conspicuous in this resurgence has been the new and forward looking philosophy of the industry.

In this paper, the practical application of resin finishes will be traced from their introduction in

After laundering, fabrics are dried under controlled temperature and humidity conditions.

After drying and conditioning, shrinkage is calculated by measuring fabric dimensions at three places in each direction, as shown in the left photograph; in center photograph, technician tests a finished fabric for resistance to staining with various types of food; strength of the knitted fabric is measured by bursting method, such as on the Mullen tester shown in the right photograph.

the 1950's to their present state in which they are often used with other products to impart numerous properties in the cotton knit. Some discussion will also center on testing procedures for the determination of dimensional stability, perhaps the most important property in cotton knits, as well as strength measurements and resistance to staining.

Processing Methods. The application of resins to tubular cotton knits was originally done on whatever equipment was available. Invariably this equipment was limited in its design, lagging far behind the progress that was being made in other areas of textile finishing. Most methods of impregnation in the early '50's utilized squeeze rollers or quetches, which were not adequately gauged to exert uniform pressure on the fabric, thus resulting in uneven wet pick-up.

After impregnation and squeezing, the fabric was mechanically spread open to a width which in many cases was greater than its knitted width. Little regard was given to the stretch and "snap-back" characteristics of the knitted structure. And in most cases not enough attention was given to tensions, both in width and in length.

The fabric was then dried and cured, usually in a loop dryer which was incapable of reaching temperatures in excess of 250 F. Most of the dryers at that time were not equipped with adequate exhaust systems; hence, an excessive humidity condition prevailed, which required prolonged curing, contributing to yellowing of whites, harshness of hand, and in some cases to unevenness in drying, which caused migration of resin.

In time, processing techniques were perfected by the more progressive mills, and equipment modified, to take full advantage of resin treatment in obtaining shrinkage control. Today's methods of applying thermosetting resins invariably include a pneumatic padder, calibrated from side to side (indicating pressure in lb/sq in.) to afford uniform distribution and uniform deposition of resin. In many cases the fabric is then run through roller-driven spreading units, which more often than not keep lengthwise tensions at a minimum. Great care is exercised at this particular point of the application to attain the proper width of the wet tubular knit fabric, paying particular attention to fabric construction and pattern.

The fabric is then dried and cured; either in one combined operation or in two separate ones. In most knitting mills today, temperatures are adequate to attain optimum properties from currently available resins. The time-temperature cycle can be regulated automatically depending on fabric weight and construction. Proper attention has been given in most plants to the high air velocity and exhaust systems of the dryers as this is considered important in applying thermosetting resins.

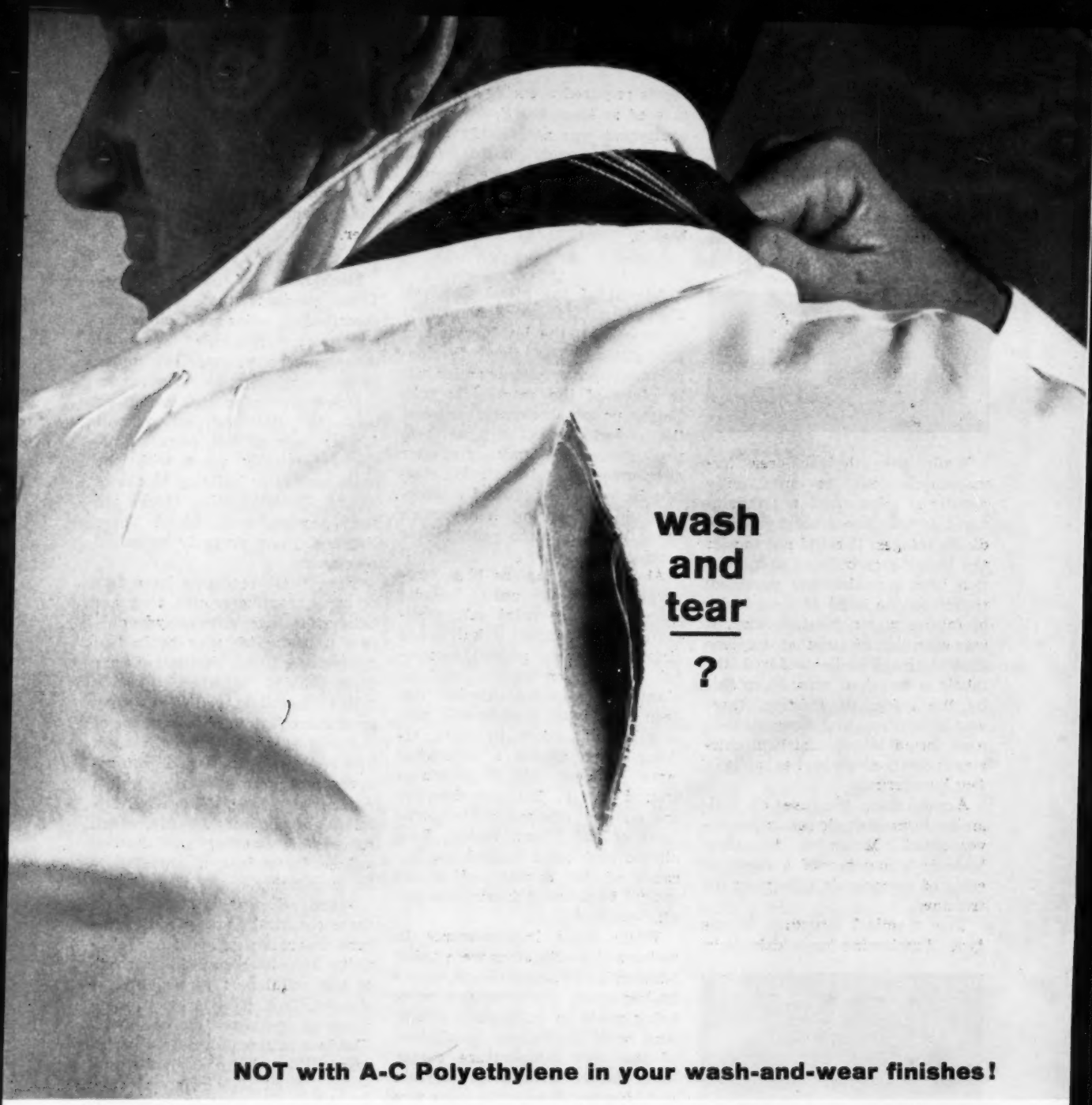
In the final operation, the fabric's width is "set" without tension on a calender. In some cases, presetting is required before curing to obtain and maintain proper width.

Resin Classes: Past and Present. The first resin class found to impart shrinkage control in the knitted fabric was based on urea formaldehyde. Its chemical structure is:

This product can be modified in several ways but it is still characterized by a combination of urea and formaldehyde.

Although it was generally recognized that temperatures of 300 F and higher were necessary to obtain optimum effects with urea formaldehyde resins, the first trials were often carried out at insufficiently high curing temperatures. The selection of resins was dictated by the economics of the market and restricted to those products which lent themselves to low temperature curing. Thus the plants had no need for high temperature curing units and, moreover, satisfactory units were available only on a very limited basis. To compensate for the shortage of high temperature curing units, attempts were made to use strong accelerators, such as ammonium chloride or ammonium sulfate.

An adequate degree of shrinkage control was achieved in many cases. But the fabric also acquired some poor properties, characteristic of the urea-formaldehyde-ammonium salt finish, such as severe strength loss due to retained chlorine from bleaching, discoloration by hot ironing after bleaching, and susceptibility to fish odor development.



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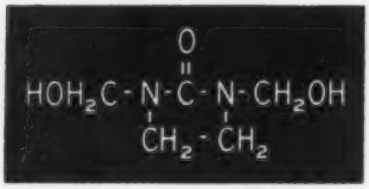
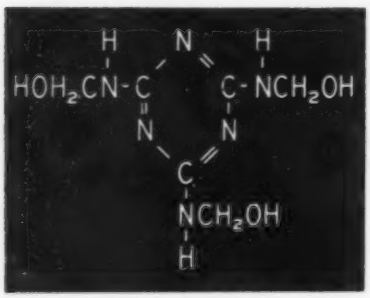
Recognizing that a more efficient resin-accelerator system was needed, ethylene urea formaldehyde was introduced, although its cost was considerably higher than that of the urea formaldehyde. This resin is a modification of urea formaldehyde. Its chemical structure is:



While the ethylene urea formaldehyde could be cured quite rapidly at relatively low temperatures, it was found to have other disadvantages. It could not impart the bodying or bulking properties that urea formaldehyde provided; therefore, the hand of most styles of fabrics was not satisfactory. It was soon discovered that ethylene urea formaldehyde tendered the fabric more than was acceptable by the trade. In addition, there was little if any improvement over urea formaldehyde finish in chlorine retention properties after a few launderings.

Accordingly, the use of melamine formaldehyde resins was investigated. Melamine formaldehyde is a member of a chemical class of compounds known as the triazines.

The chemical structure of one type of melamine formaldehyde is:



This type of product gave good shrinkage control, added body to the fabric and did not cause as severe a tendering as other resins, nor a loss in strength after chlorine bleaching. Its durability to laundering was exceptionally good. However, the melamine formaldehyde resins available in the early 1950's required a curing temperature of at least 300 F, for which equipment was not readily available, as already noted. Also, melamine - formaldehyde - treated fabric could be discolored when washed with a chlorine-containing bleach.

Advent of the Metal Catalyst. Coupled with these developments in resins were the developments in accelerators. The first development utilized an organic amine salt in place of the ammonium salt. This type of accelerator reduced the tendering effect of some resin products and the tendency of odor development in fabric during storage. However, it required a somewhat higher curing temperature than the ammonium salt-type of accelerator.

About this time, as high temperature curing units became more plentiful, metal salt accelerators were adapted to knit goods finishing, having proved successful in woven-fabric finishing plants. Magnesium chloride has been used with considerable success by knit goods finishers, although zinc nitrate is somewhat more efficient at temperatures around 300 F. Both accelerators are equally efficient at temperatures of 325 F and higher. Zinc nitrate has found limited use because of its adverse effect on optical bleaches if fabrics are not after-washed.

While these improvements in resins and accelerators were being adopted by finishing plants, equally important improvements were being made in equipment design. And with continuing installation of the high temperature curing units and an advancement in resin finishing technology, the stage was set for the introduction of products possessing the beneficial properties of melamine formaldehyde without its disadvantages. One such product is Aerotex Resin 23 Special, introduced in 1956; and Aerotex Resin 44, offered in 1960.

Aerotex Resin 23 Special is a polyfunctional, triazine-formaldehyde-based cross-linking agent. It is easy to cure, has good durability and does not discolor under normal laundering conditions. Aerotex Resin 44, a modified triazine-based cross-linking agent, is characterized by its exceptional durability to laundering. Both products afford excellent dimensional stability to cotton knit fabrics. Recommended formulas containing these products will be discussed later.

Mechanism of Cross-Linking. These products that have been described as resins are in actuality monomeric chemicals. Some of them can be polymerized under certain conditions to form resins.

However, under the conditions used for finishing cotton knit fabrics they do not form resins; they chemically react with the basic molecular building blocks of cotton. These building blocks are the anhydroglucose units. These chemicals may properly be called reactants.

Since these reactants have two or more reactive groups, they are believed to react with anhydroglucose units, which may be in two different cellulose chains, and link these chains together. This is called crosslinking. When they crosslink cellulose, the elasticity of the cellulose chain is increased. The result is a fiber which can recover when creased or wrinkled. At the same time, the reacted cellulose absorbs less moisture, which reduces its swelling and thereby reduces its tendency to shrink during laundering.

When cellulose is reacted with these chemicals, not only is moisture absorption reduced and elasticity increased, but the strength of the cellulose fiber is also decreased. This reduction in strength always accompanies the treatment. The loss in strength does not represent fiber degradation, because if the chemical is removed from the fabric the original strength is recovered.

Test Methods. The most important test to be performed on cotton knitted fabrics is the determination of shrinkage after laundering. An ideal test is one that will indicate exactly what will happen under conditions of use. The testing procedure should be fast, easy to carry out, and not require expensive testing equipment. And it

Continued on page 80

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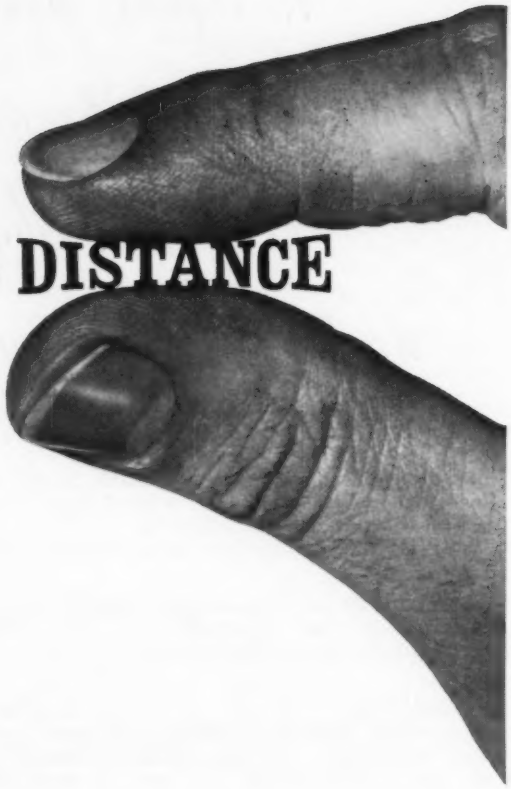

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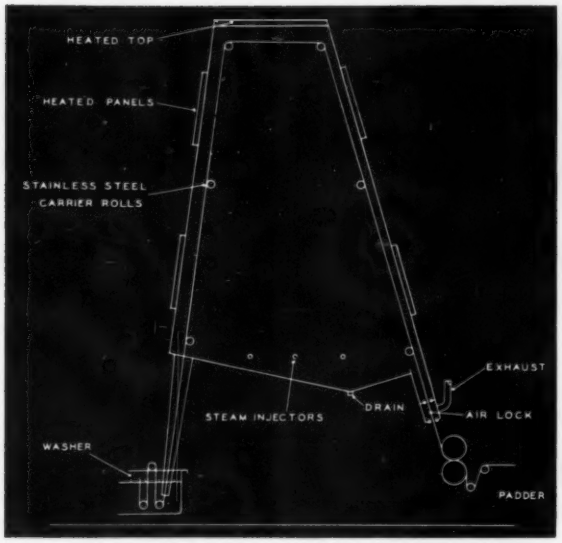


FIG. 1. The vertical flash ager requires the least amount of space and it is the most practical for many mills—it's less efficient than the horizontal flash ager, but it is also much more versatile.

Design for Better Flash Aging

Choose the flash ager that's best for your plant, but check these ways to get improved efficiency with any type

by Lewis A. Prescott
Tower Iron Works, Inc.

Exclusive

SEVERAL very good articles have been written on the various mechanical considerations and problems relating to the art of flash ager construction, operation, and installation.* Although these articles differ slightly from one another, they have all covered the basic necessities fairly well. The purpose of this article is to elaborate on these necessities and to offer a clearer picture of the actual requirements of the ager proper and the various methods of installation.

Of prime importance, of course, is the ability of the machine to maintain the required air-free operating temperature, to eliminate all possibility of water spotting, to fit into a particular finishing plant's physical layout, and to be of sufficient size to furnish the desired production output. With careful planning, all of these requirements can usually be met without difficulty.

Originally, agers were heated by steam chests or chambers along the top of the machine. This was not very practical from either an operating or cost point of view. Maximum steam operating pressures were in the vicinity of 15 psi (approximately 250 F), resulting in poor heating capabilities. In order to increase this steam pressure, it was necessary to construct a very heavy and expensive chest.

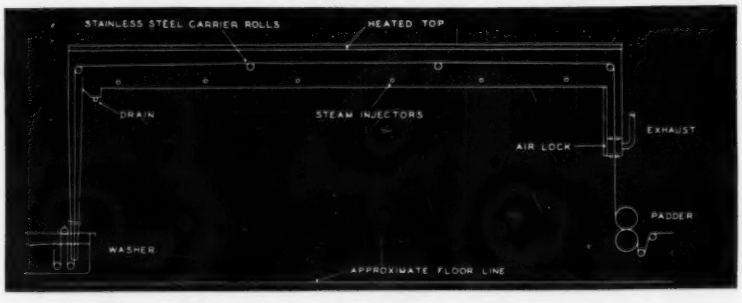
It was found that with the use of copper heating coils, fastened to the top of the ager, operating steam pressures up to 90 psi (approximately 330 F) could be used at considerably reduced manufacturing costs and at the same time provide improved efficiency. These coils are easily removed; the fabricated steam chest was a permanent part of the machine. Maintenance due to corrosion is practically nonexistent with the coil type of construction.

Since relatively low-pressure steam is used in the aging chamber itself and since at least one end of the machine is vented to atmosphere, reasonably light construction can be used throughout. This low-pressure steam is not used to heat the ager but merely to maintain the proper air-free operating conditions. The introduction of high-pressure steam into the aging chamber brings about several unfavorable conditions. It is evident that if large quantities of steam are introduced into the chamber at high pressures, then large amounts of waste must be removed either in the form of condensate or exhaust steam since only a small fraction of this moisture will be absorbed by the fabric being processed.

The most obvious problem in this case is the waste of valuable steam. However, probably more important is the fact that the interior parts of the machine become

Continued on page 106

FIG. 2. With either the horizontal ager, below, or the vertical ager, driven rolls must be used to prevent condensate from forming under them, making a water-spotting potential.



*See, for example, "Flash Aging," TEXTILE INDUSTRIES for September 1960, pages 107-109, 116.

Fiber Reactives: Exhaust

How to get the most from the "cold dyeing" fiber reactive dyestuffs

by Richard Bright

Exclusive

THE FIRST fiber reactive dyes to appear on the market five years ago were of the "cold dyeing" type. As a development, they represented a method of application radically different from customary dyeing procedures, which require high temperatures. In the following years, reactives of the "hot dyeing" variety were introduced; and most of the industry's research has centered on this type. Nevertheless, the "cold dyeing" reactives, marketed under the trademark "Procion," have been of special interest to dyers of cotton and rayon yarns. Research in this branch of the industry, though not as concentrated, has been similarly fruitful.

A characteristic of all fiber reactives is the brilliance and wet fastness that they provide—regardless of dyestuff composition and the chemical structure of the linkage they form with cellulose. This description of the fiber reactives, which distinguishes them from other dyestuff classes, is one of the few generalizations that can be made about them. For even among dyestuffs belonging to the same commercial brand, there are those which deviate in affinity, behavior, or properties.

Accordingly, this article will center on one specific brand—the "cold dyeing" Procions—and will describe their application to cotton and rayon yarns in skein and package dyeing systems. Where necessary, as in listing formulations, dyestuffs will be identified by their commercial names to make discussion more meaningful to practical chemists and dyers.

One may question, first of all, the use of "cold dyeing" reactives, since so much more research effort has been slanted toward the "hot dyeing" brands. The reasons for their use by yarn dyers, however (for particular end uses, of course), are quite apparent. These can be set forth as follows:

1. Adaptability to equipment on hand—to package, skein, and beck machines.
2. Ease of application.
3. Good to excellent light and wash fastness.
4. Better exhausting and more highly reactive than the "hot dyeing" brands, requiring less salt and alkali.
5. Brilliance and vividness of shade (an attribute of all fiber reactives) which stylists and the consuming public are beginning to demand.

End-use requirements and the restrictions that are placed on dyeing and finishing costs largely dictate the selection of colors. When

Dyeing

PHOTO COURTESY JORDAN MILLS AND MORTON MACHINE WORKS

dyeing cotton and rayon yarns for high-quality upholstery and drapery markets (the end uses with which this paper will be concerned), the chief fastness properties required are:

1. Fastness to light.
2. Fastness to drycleaning.
3. Fastness to washing (in some instances).
4. Resistance to atmospheric fumes (gas fading).
5. Fastness to wet and dry crocking.
6. Fastness to certain resin finishes.

Before the introduction of the reactives, these requirements were met by selected colors from the direct, direct and developed, naphthol, vat classes. But selected Procions can also meet these requirements, offering in some instances a superior brilliance. Thus their use is indicated when clean, bright shades are required, provided that these color attributes and the fastness properties required cannot be met more economically by other dyestuffs.

As is well known to chemists and dyers, three steps are involved in applying fiber reactives, either in exhaustion or padding methods: (1) Adsorption of dyestuff on the fiber (2) Fixation through chemical linkage with cellulose and (3) Removal of unreacted portion of dyestuff to obtain maximum fastness properties. Dyeing by exhaustion methods requires a dyestuff of high substantivity, as contrasted to padding and printing methods, which require a dyestuff of low substantivity.

Thus, the "cold dyeing" reactives are particularly suitable for package and skein dyeing by virtue of their high degree of exhaustion and reactivity. And it is worthwhile to mention, too, that their range has been expanded to 15 dyestuffs to offer a rather wide array of shades to stylist and dyer. However, the range does not yet include a suitable black. For acceptance by the trade, such a color would have to possess unusual brilliance and offer greater economic advantages than are now possible by selecting blacks from such classes as the directs, naphthols, etc.

Preparing the Dyes. For best results in dyeing, some precautions must be observed in preparing the Procions for use. The following precautions are particularly important:

1. Store dyestuffs in closed containers in a cool place.

2. Dissolve small amounts of dyestuff by stirring the dry powder into warm water (100-120 F); dissolve large amounts by first pasting dyestuff with warm water and then adding more water (120 F), until the dyestuff has been completely dissolved.

3. Do not use live steam and do not boil in dissolving—this will decompose the dyestuff.

4. Be sure that equipment — pails, ladles, etc.—is clean and free of alkali.

5. Since Procions are anionic, stay away from cationic wetting agents, softeners, and dyestuffs.

6. Do not make up solutions too far in advance (say for second and and third shifts); the color value diminishes after five hours.

7. Some dyestuffs are sensitive to metallic copper. Therefore, it is not wise to use copper dyeing vessels and piping. A proper sequestering agent must be included in the dyeing formulation, otherwise there can be a loss in color yield and a dulling of shade.

Preparation of yarn may be carried out according to established procedures for rayon and cotton. But some precautions must be observed. While rayon may be readily scoured at 180 F for 15 minutes, cotton requires a scour of 20 minutes and longer at 200 F. As scouring agents, these three prod-

Leon Moore (above, left), one of 12 Du Pont textile bleaching representatives, discusses a new Du Pont bleaching process . . .

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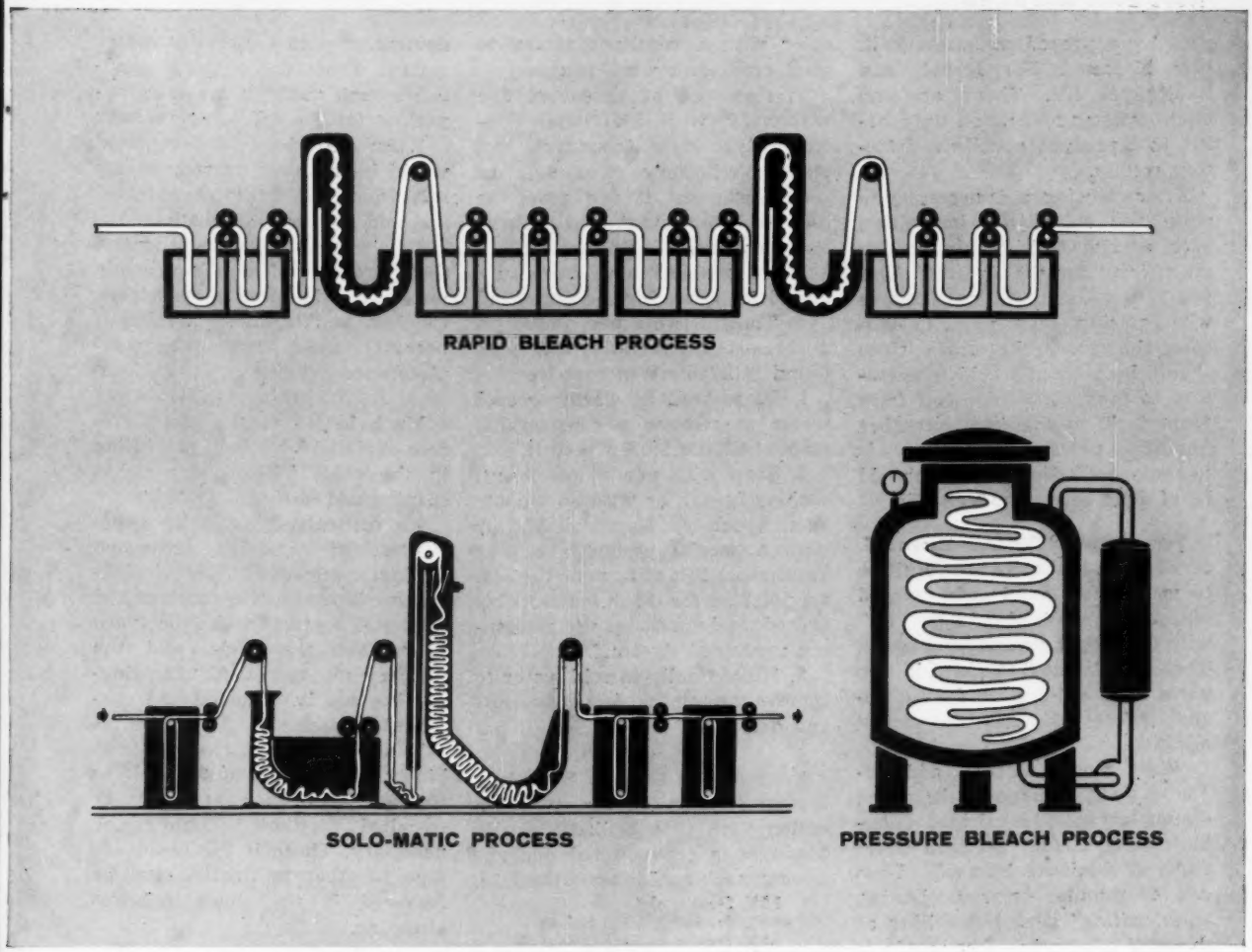

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ucts have proved satisfactory in use: Nacconol SL, Igepal, and Synthrapol SP. There are, no doubt, other products on the market that produce equally satisfactory results.

After scouring, it is necessary to rinse the solubilized impurities, such as sizes, which can possess an affinity for the dyestuff. This precaution applies particularly when rinsing cotton yarn. In each case, however, the final rinse should be done at a cold temperature to prevent the dyestuff from "jumping" on the fiber. Another important precaution to observe is to remove alkali—the yarn should be of a pH between 6.5 and 7.5.

Temperature Control Essential. Since some dyestuffs are sensitive to metal salts, as already pointed out, the dyebath should be "set" with the proper sequestering agent. Then, the dyestuff is added in two parts with a 5-minute dyeing period before and after the second addition.

When dyeing cotton, add 80-150% (owg) common salt; when dyeing rayon, add calcined Glauber's salt—in four or more equal parts at 5-minute intervals. Then dye 40 minutes or more. During this "salting" period, levelling of dyestuff occurs. In other words, it is uniformly distributed in the fiber.

To fix this absorbed dyestuff, when dyeing rayon, add 10% to 15% (owg) soda ash; when dyeing cotton, use soda ash or trisodium phosphate. Make the additions in two or three parts at 10-minute intervals and dye for 45 minutes or longer.

Dyeing temperatures are critical. A temperature of 70-90 F should be used when dyeing rayon, and a temperature of 100-105 F for dyeing cotton. Higher temperatures than these will cause a lowering in color yield, since they promote reaction of dyestuff with water.

In the third and final step, the unreacted dyestuff is removed from the yarn. This by-product of dyeing—formed by reaction of dyestuff with water—can cause poor initial fastness to crocking and washing if not completely removed. Any subsequent washing will serve to remove the loose color with a resultant return to good crock and wash fastness.

The amount of unreacted dye will vary with individual dyestuffs. But it is dependent, too, on the efficiency of dyeing. In some instances, it can reach as high as 40% on unmercerized cotton yarns dyed to full shades.

Many methods have been suggested for removing the unreacted dye. The following one, based on a three-step procedure, has been found satisfactory in practice:

1. Rinse well in warm or cool water to remove a considerable amount of the loose dyestuff.

2. Soap with a nonionic agent, such as Igepal; or with an anionic agent, such as Nacconol SL; or with a special product, such as Synthrapol SP; at as near the boil as possible for 20 minutes. This procedure loosens up the remaining unreacted dyestuff.

3. Rinse finally in cold water to remove remaining loose dyestuff and detergent.

Formula for Dyeing. Here is a typical formulation for dyeing a cotton yarn to a brilliant scarlet shade on a conventional package dyeing machine. Liquor ratio, 1-15.

1.0% Synthrapol SP
1.5% Procion Brilliant Red 5B
1.5% Procion Brilliant Orange G
4.0% Common salt (vol)
8.0% Soda ash

[Yarn has been previously scoured for 20 minutes at 200 F with 1% (owg) Synthrapol SP, and rinsed for 10 minutes in cold water.]

Dyeing procedure:

Set dye bath at 80 F.

Add dissolved dyestuffs in two parts and dye 5 minutes each part. (Adsorption of dyestuff on fiber takes place.)

Add common salt in four parts; dye 10 minutes each part. Run additional 30 minutes. (Levelling of dyestuff occurs.)

Add soda ash in two parts of 10 minutes each. Run additional 45 minutes. (Fixation of dyestuff occurs.)

Rinse in cold water for 10 minutes; soap with 1% (owg) Synthrapol SP for 20 minutes at 200 F. Rinse and dry. (Removal of unreacted dyestuff.)

Methods have been recommended for removing unreacted dyestuff which call for the use of a neutral soap in a salt-free water system. From the writer's standpoint, such methods are least appealing for the following reasons:

1. An extra long rinsing period would be required to remove the salt from the super-concentrated salt and soda ash dye bath.

2. In many areas of the country, the hardness of the processing water could present problems. Calcium and magnesium salts, if present, would have to be completely sequestered to prevent soap spots from forming on the yarn.

Much better results are therefore obtained by a long prerinsing in the cold, followed by a hot soaping and lastly by a rinsing.

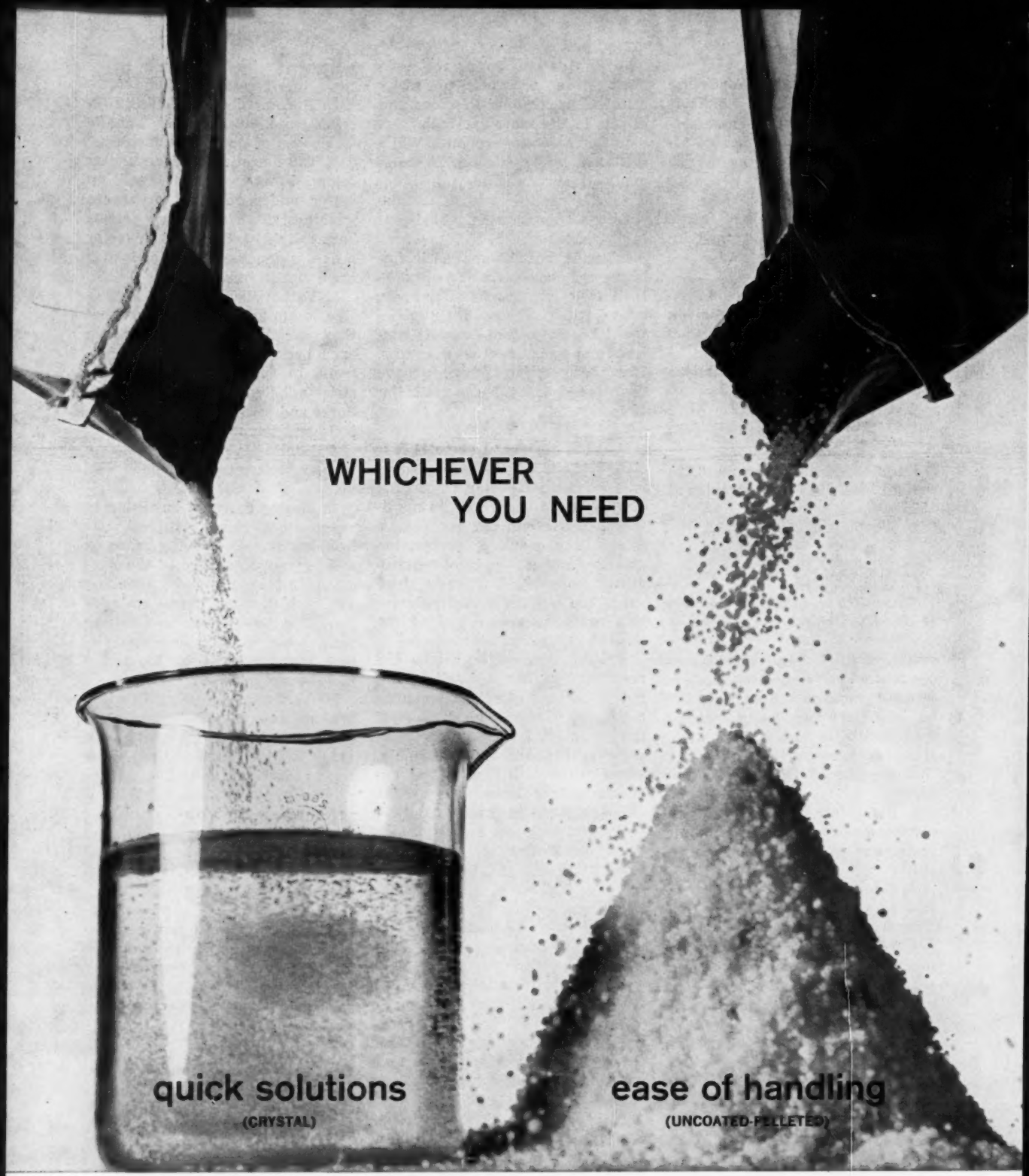
No difficulty should be experienced in removing unreacted dyeing applications: The rinsing-soaping liquors are in constant and intimate contact with the yarn throughout the cycle, and the temperatures and length of rinsing-soaping can be adjusted and controlled as desired.

Hence, additional treatments to bind unreacted dyestuff, such as through application of resins or so-called "fixatives," should not be necessary. There is the disadvantage, too, that the fixative must be removed if the shade requires stripping.

Stripping. It is always of advantage if a color can be stripped. There are times when it is the only means of correcting mistakes. Besides, stripping can effectively reduce inventories; for a shade that is no longer in demand can be taken out of stock and put into use again, provided the fiber has not been degraded during stripping. Ease of stripping is, incidentally, an advantage of the direct dyes which can be stripped easily by a sodium hydrosulfite treatment.

A disadvantage of the original fiber reactives was their poor fastness to chlorine bleaching. This prevented their use in washable fabrics because the housewife and commercial laundries generally use a chlorine bleach in laundering. New dyestuffs have since been developed, however, which resist chlorine bleaching and can be used without fear in washable fabrics.

Fabrics for use in upholstery and drapery materials will only be



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drycleaned in usage. Laundering is neither recommended nor is it done by the housewife. Therefore, chlorine bleaching becomes an effective stripping treatment. To strip the Procions one of two steps can be followed:

1. Chlorine bleaching those colors which can be stripped by this method for satisfactory redyeing.

2. Stripping by a two-step method, in which the yarn is first given a hydrosulfite treatment and then a chlorine bleaching.

Typical stripping formulations for each method are as follows:

A. Chlorine strip:

0.4% available chlorine (vol)
0.1% Nacconol SL (vol)
40 minutes at 120 F

Rinse, then anti-chlor in 0.2% sodium bisulfite for 10 minutes at 120F.

B. Double strip:

0.3% Sodium hydrosulfite (vol)
0.2% Soda Ash (vol)
0.1% Peregal O (vol)
60 minutes at 200 F

Rinse; follow with chlorine strip as described above.

Role of the Laboratory. For successful and economical application of fiber reactives, a properly staffed laboratory can be of tremendous assistance to the plant dyer. Here are examples of the service that the plant laboratory can provide:

1. Screening dyestuffs to best meet end-use requirements and for their compatability with other dyestuffs.

2. Establishing the percentage of fixation for each dyestuff by running trials beforehand.

3. Establishing formulations and improving on dyeing procedures.

4. Evaluating dyestuffs on a cost and color-value basis against other dyestuffs.

5. Testing samples of production-dyed lots to determine if they have been properly processed, thereby obtaining the maximum fastness properties of the fiber reactives.

6. If stripping is necessary, determining the best stripping method for the particular dyestuffs used in the off-shade.

Numerous other experiments suggest themselves when a new color development, such as the fiber reactives, is being adopted by the plant. For example, the idea must have occurred to many colorists to combine Procions and directs in the same dye bath, perhaps for reasons of economy. While this may be practicable from an application standpoint, the direct dyestuff cannot withstand the rinsing-soaping-rinsing period that follows dyeing.

If resins must be applied in finishing for one reason or another—such as to improve hand or body, or to impart crease resistance—the laboratory can evaluate finishes and their effect on dyestuffs. The fiber reactives as a class have been found adaptable to resin finishing.

What Is an Ideal Dyestuff? It is characteristic of the dyeing trade to expect ideal performance of a new dyestuff class both in application and in end use. In package dyeing, for example, penetration and levelling are the chief requirements imposed. Uniformly dyed yarns are especially desirable for best aesthetic appearance of the knitted or woven fabric.

Streakiness, bars, or bands—the results of faulty application—are not passable defects in high quality materials. Thus, an ideal dyestuff for package dyeing is one that penetrates readily and thoroughly, levels without difficulty, and exhausts at the same rate as the other dyestuffs in the formulation.

The Procions as a class approach these ends. However, they have some disadvantages. These can be listed as follows:

1. They require extreme care in preparation—they cannot be solubilized by boiling, and they are sensitive to alkalies.

2. The yarn cannot be scoured and dyed simultaneously.

3. Penetration, brilliance, and color yield depend to a large extent on proper preparation and cleanliness of the yarn.

4. Dyeing cycle is long.

Although most of the Procions are sensitive to chlorine bleaching and to certain resin finishes, for many end uses in the drapery and upholstery field, these shortcomings are of no consequence.

Procions can be selected to produce a wide range of shades (excluding a black) which are generally applied in concentrations of 1 to 6%. For the most part, Procions pose greatest competition to:

1. The directs, particularly in bright red and scarlet shades, which are of poor light fastness.

2. The diazotized and developed colors. Fiber reactives stand up better under repeated or severe washings. As a class they possess better light fastness, their color range is much greater, and they are easier to apply.

3. Vats, which are most expensive to apply, not to mention that they are troublesome to use in open beck or skein dyeing equipment. In application they require strict adherence to dyeing procedures and critical control of chemicals and temperature.

4. Naphthols. Fiber reactives possess better crock and light fastness.

In closing it would be fitting to report that much progress has been made and is being made to extend the versatility of the Procions. One unique and interesting approach that has been developed for their application is a batchwise dyeing process in which viscose rayon is dyed by the warm bicarbonate method.

Here, the cold dyeing Procions are applied to viscose rayon at 120-140 F in dyebaths held at a pH of 7.5 to 8.5 with sodium bicarbonate as the alkali. The advantage of this method is that it gives maximum color yields for certain dyestuffs with improved penetration—factors of special importance in package-dyeing applications.

As time goes on, it is not unreasonable to expect that new developments utilizing the "cold dyeing" Procions will be regularly forthcoming, especially for batchwise and package-dyeing applications.

NOTE: *"Procion"* is the trademark of Imperial Chemical Industries, Ltd., London, England, for "cold dyeing" fiber reactives. The Procions are sold in the U.S.A. by Arnold, Hoffman & Co., Inc., Providence, R. I., a subsidiary of ICI.

Other trademarks used in this article: "Igepal," General Aniline & Film Corp.; "Nacconol," National Aniline Division, Allied Chemical Corp.; "Peregal," General Aniline & Film Corp.; and "Synthrapol," Arnold, Hoffman & Co., Inc.

For further information on the fiber reactives, see the following articles which have appeared in TEXTILE INDUSTRIES: "Fiber Reactive Dyes," December 1959, pages 71-73; "Fiber Reactives in Package Dyeing," December 1959, pages 74-76; "Printing With the Fiber Reactives," January 1960, pages 74-80, and February 1960, pages 132-135; "Dyeing Cottons With the Fiber Reactives," February 1960, pages 134-138, 157, 161; and "The Significance of Oxygen in Reactive Dyeing," May 1961, pages 139, 141.

Automatic screen printing

(from page 57)

vantages for short runs and for single-color applications, because of its simplicity; but for large yardages, the conventional set-up of the machine which utilizes color box, furnishing brush, and oscillating doctor is preferable because it also keeps engravings clean.

Present Machines of Sound Design. The large-scale encroachment on dressgoods markets by the automatic screen machine, predicted only a few years ago, has not yet come about. But there is evidence that operators of screen machines are beginning to eye these markets in greater numbers. This is an expected development since the screen machine offers versatility in meeting styling demands and has reached an advanced status, as will be seen in the following paragraphs. (An accompanying article discusses flash aging, a process of particular interest to screen printers.)

Last year's survey of the number and distribution of automatic screen printing machines listed the models of seven manufacturers. In principle of operation, the machines described were identical: Each utilizes an endless belt of a dimensionally stable composition (of rubber base in most models) to which the fabric adheres as it advances through the printing cycle. In all models except one, squeegee design has been carried over from hand screen printing. In the exception (the Zimmer machine), specially alloyed rollers of various diameters are used to spread the color paste, being moved by magnetic forces beneath the belt.

During the last year, no major changes in machine design took place; at least not in the models of the manufacturers responding to this year's survey. Though a trend had been observed last year toward an increasing use of hydraulic power, which promotes a higher degree of printing accuracy, this trend has not been extended to all models. Most improvements have been of a minor significance,

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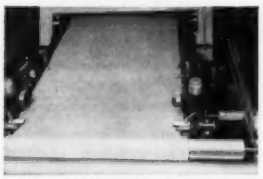
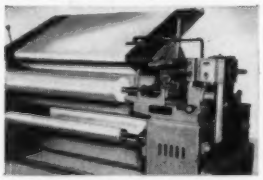


Medium-duty double unit with air sensing, positioning rails on tenter frame for higher speeds.

Photoelectric reflected light head senses cloth position by following printed line or selvage.



Light-duty unit with air sensing, applied to examining machine. Similar unit is used in tubing operation.

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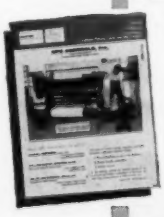

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strongly suggesting that present machines are of sound design.

One manufacturer, Toshin Kogyo, of Japan, reports that models of the Ichinose machine are now available whose repeat length is infinitely variable, rather than being various increments of repeats. The company also reports that improvements have been made toward simplicity in the design of electrical and mechanical parts and systems.

Another manufacturer, Reggiani Meccanotex, of Bergamo, Italy, maker of the Reggiani machine, reports that it has not been deemed advisable to make any major changes in its model; nor to make any further improvements in accuracy of printing. Minor improvements have been made, however, as in the electro-clutch transmission of the squeegee heads and in the hydraulic system.

To better service U.S. plants, the manufacturer is substituting electrical and hydraulic equipment of U. S. manufacture. Other improvements in the Reggiani include strengthening of the printing table, new equipment for automatic pasting of sheer fabrics and knit goods on backgray, and a more efficient air-flow system.

The Swiss manufacturer, Fritz Buser, reports several improvements on the Buser machine. New magnets now grip the belt with a force 100 times greater than previous magnets, providing a faster stopping and moving action without loss of register. A new cooling system has been developed for the hydraulic oil, which is thermostatically controlled to maintain a uniform oil temperature, important to accuracy of printing. Improvements have also been made in the hydraulic control valves to regulate acceleration and deceleration for even smoother operation; and in squeegee design for a finer application of adhesive to belt.

The manufacturer of the Stork machine reports that major development effort has been concentrated on the machine's repeat control mechanism, the Micromatic, which affords accuracy at a high speed of printing. Effort has also been made to provide a more efficient cleaning of the belt after printing by combining a brushing machine with the washer.

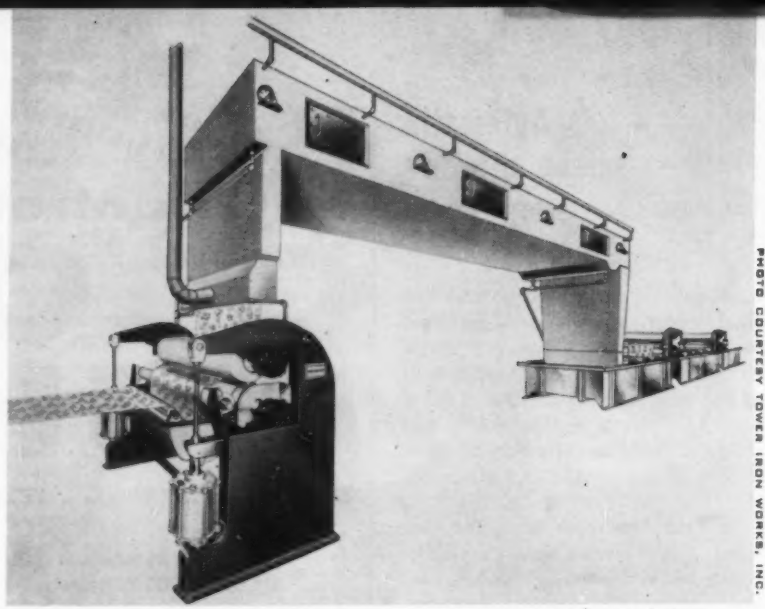

PHOTO COURTESY TOWER IRON WORKS, INC.

Some screen printing plants use flash aging with much success. Here is a typical arrangement of a horizontal ager and soaping range. (For details, see an accompanying article.)

Comerio Ercole SpA, of Italy, manufacturer of a machine of the same name, describes a patented device in its literature, known as the Selestampa Unit, by which a large repeat can be obtained using screens of ordinary size. Table cloths, tapestries, and saris, of unusual lengths, can be printed by programming the screens for individual operation, as required. A dobby, equipped with a number of supplementary switches (equal to the number of screens) can automatically cut off (or put into operation) one or more screens.

The machine models in use today vary in design according to desired objectives in printing. Some of the models have been designed for high-speed operation; while others are considered slow-operating units. Still others offer high-speed operation together with printing flexibility. Hence, cost of machines varies accordingly. But regardless of make, plants are interested in maintaining top-level production without loss of quality.

There are several means by which this dual goal can be obtained and thereby provide the quickest return on investment:

1. By matching shades beforehand.

2. By standardizing color shop routines; particularly in making up pastes.

3. By preparing fabric of uniform cleanliness and absorbency.

4. By maintaining a competent plant staff; particularly a printing foreman and colorist-chemist.

Growth is Gradual. Besides its success in the decorative fabric field, the automatic screen machine has also found use in sheeting and blanket markets. Many plants that began operations with single machines are today operating three and four machines on an increasingly diversified production. As evidence that the industry is becoming more and more style conscious, one screen maker, Tavernon Photo-Engraving, of Paterson, N. J., points out that patterns are becoming more complex, and that interest is increasing in new colored effects.

Such gradual acceptance of automatic screen printing by certain segments of the industry reflects a strong trend to break away from the roller machine. This trend is a new one in this country, having been started only within the last 10 years. While it is out of the question that this trend will succeed in a large-scale encroachment on the roller machine, it is significant to note that new methods of printing are beginning to steal some of its markets. One large firm, according to reports in the field, utilizes four methods of printing to meet its diverse requirements: Hand and automatic screen printing, roller and rotary screen printing.

In this country, there are about 420 roller machines in place, according to a reliable source. About

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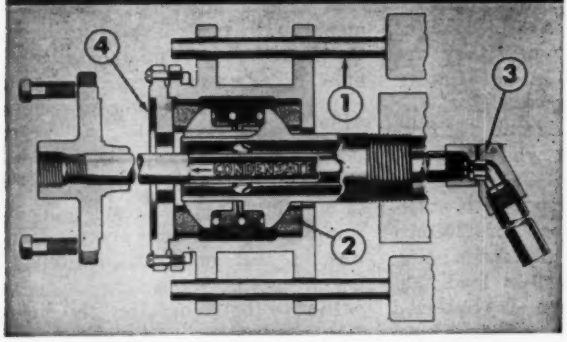

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Resin finishing knits

(from page 66)

should yield accurate and reproducible results. While all of these requirements are desirable to achieve, the following ones are considered most important:

1. Obtaining results that reproduce those found under actual conditions of use.

2. Obtaining reproducible results.

A series of wash tests was carried out to determine the effect of drying conditions, the type of load used, the size of the test samples, and many other variables. These tests yielded some very surprising results. For example, it was found that:

1. Hang drying causes slightly less shrinkage than either screen or tumble drying when the wash specimens tested are either garments or 24-inch tubular pieces. There is no advantage in hang drying when the test specimens measure 14 x 14 inches.

2. There is no difference in shrinkage results when samples are washed with a 3-lb load of laundry bags or when they are washed with a 9-lb load of laundry bags.

3. There is considerable difference in shrinkage when samples are washed with a 3-lb load of 20-inch squares as compared to washing in a 9-lb load of 20-inch squares, the lower shrinkage being obtained with the 9-lb load.

4. Less shrinkage is obtained during washing when 24-inch tubular specimens are used instead of 14 x 14 inch specimens.

5. Hanging weights on dry samples, which have shrunk due to washing, causes the samples to stretch and thus reduces the apparent shrinkage. However, practically all of the stretch is recovered after the tension is released. Some of the stretch is not recoverable on the 14 x 14 specimens.

On the basis of these data and many other facts, Cyanamid has rigidly specified the conditions under which samples of cotton knit fabrics must be washed to meet quality control specifications. Garments made from fabrics that meet these requirements will not shrink out of fit under use conditions.

Strength of cotton knitted fabrics is usually measured in terms of bursting strength. The two most common test methods are the ball bursting test and the Mullen bursting strength.

In the ball bursting test, the fabric is held in a ring and a steel ball is forced against one face until the fabric ruptures. The force required to rupture the fabric is registered in pounds.

In the Mullen test, the fabric is held in a clamp while liquid is pumped against a rubber diaphragm which is in contact with one side of the fabric, forcing the rubber diaphragm to expand against the fabric. Eventually the fabric bursts, and the force re-

Continued on page 104

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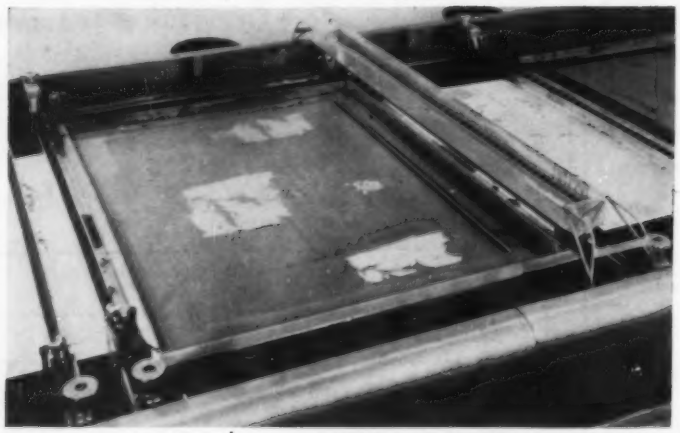

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Automatic screen printing

(from page 78)

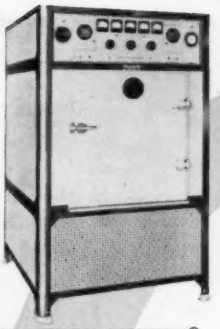
320 of these are used chiefly for printing cotton fabrics—a market that reached 1.8 billion yards in 1960. The remaining number is used chiefly for printing fabrics of silk and man-made fibers—a market that reached about 300,000,000 yards in 1960. The portion of this production which can be accounted for by automatic screen, rotary screen, and surface printing machines is extremely small. For it is doubtful if their combined number exceeds 50 machines.

In contrast, the growth of automatic screen printing in countries outside the U.S. continues at a high rate, judging by statistics supplied by the machinery manufacturers (or their U.S. representatives). This year's figures, compared with last, are given in the accompanying table.

The Future. In summarizing the outlook for automatic screen printing, it is not unreasonable to say that it will continue to grow at the expense of roller printing. For one thing, it offers more favorable economics for shorter runs, and places no serious demands on skills. In roller printing, talent commands a high price and time-consuming skills are required, as in filing a doctor and replacing a lapping, which reduce productivity.

And other inherent shortcomings are revealed, particularly when printing for high quality markets. The styling is often of greater complexity here and requires standards of printing above the level that easily satisfies demands of low-end markets.

The roller printing industry is nevertheless seemingly content with its problems, showing little enthusiasm and ingenuity in attacking them. The new methods of printing, on the other hand, of which automatic screen printing is one, reflect principles of machine design which eliminate the need for costly skills, and make provisions for automating repetitive movements and routines.



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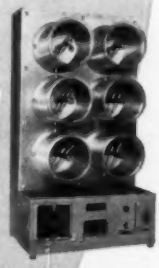

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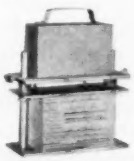

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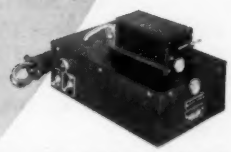

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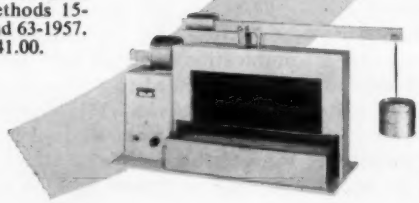

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Finishing costs

(from page 61)

subject of automation and to a much lesser extent on the subject of instrumentation. Actually, automation cannot be accomplished without proper use of instruments. By instruments, we refer to *recording* and *controlling* instruments. If not recording, instruments provide no record of performance for compilation of useful statistical data.

Having combined as many processes as is practicable from an automation standpoint, a centralized control panel should be installed, easily visible from the key operating position. To scatter controls along the length of a long range invites neglect. By proper use and location of controls, however, speeds can usually be increased and labor reduced to such a degree that a key operator can be trained to keep a check on such important factors as temperature, speed, roll pressures, flow rates, steam pressure, bath consistency, and pH.

Many electronic aids are being developed to take the place of visual and chemical analysis. Electronic scanners are being used for high-speed printing. Push button control of registration shows promise to replace manual adjustment. Pumps for color replenishment save labor and waste.

In some dyeing processes, electronic analysis and adjustment has been applied to maintain dyebath consistency by detecting shortages of each prime color as it occurs and automatically injecting prearranged shots to insure even shades from start to finish of a dye lot. This is accomplished with color filters, polarizing screens, and electric eyes.

Where not possible by machinery alignment, a certain amount of automation can be accomplished by materials handling applied to in-process stock. This method can often enhance quality and decrease soiling and damage to goods, as well as reduce labor.

Centralization of Responsibility. As speeds increase and controls are centralized, so must responsibility be centralized. It is important that each operator be adequately trained and made aware of his responsibility. Since he has access to a control panel which instantly reflects conditions from start to finish of an operation or series of operations, the operator should be held strictly responsible for the quality of the finished product. This is possible since he has at his finger tips the means to adjust for any discrepancy which may result in poor work.

Other personnel should be employed for such operations as keeping back-stock available and doffing the finished product. Suitable means of communications can be employed to keep him in touch with key points where vocal advice or instructions are necessary. Every precaution should be taken against circumstances which might require the key operator to depart from his station.

The overseer should be centrally located and in constant communication with all key operators who may need to report to him or seek his advice. He should visit each operator as required to avoid the possibility of shut-down to allow key personnel to seek out the overseer. A clear-cut chain of command will keep down confusion and result in a better relationship throughout the department.

A well designed rack system is sound insurance against damage to finished products awaiting shipment. It should be coupled with a materials handling system to minimize costs.

Protection of Finished Product. Nothing can be more disheartening to the finishing plant operator than the return for rerun of first-quality goods because of damage from soilage during storage. He expects good quality leaving his department to remain such.

Through poor warehousing, many plants lose profits that have been made elsewhere in their operation. One plant recently discovered it was repacking fifteen per cent of its cases. No statistics had been kept to indicate how many yards were reprocessed because of damage. Invariably the conditions which contribute to damage during storage also require excessive labor for handling, not to mention searching for and finding cartons when needed for shipment. One plant recently "lost" considerable yardage of a high-cost fabric and had to run the order a second time for shipment.

A well designed rack system coupled with an adequate materials handling system will give insurance against such damage and cut handling costs to a minimum.

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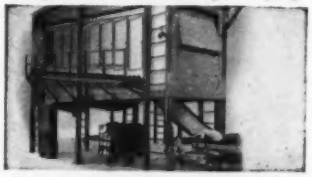

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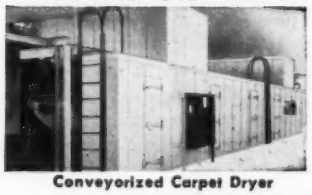

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Often this system can be originated at the put-up department and include such operations as baling, strapping, weighing, stenciling, and transporting to storage. Even shading can be mechanized and indeed has been mechanized at several plants.

Proper design or alteration of a finished goods warehouse is essential for ease of storage, location for staging shipments, and protection during storage. Column spacing and roof height are important factors in a finished goods warehouse and should be studied carefully before building or remodeling the structure.

New Methods. There is an adage that everyone is resistant to change. Everything new is considered impossible until someone with broader vision proves it to be practical. Every successful finishing plant must maintain a constant program of research and development to keep pace with competition.

Pilot operations are necessary to evaluate new methods in the laboratory before attempting them on a production basis. However, unless management and supervision are willing and eager to try new methods, the finishing plant will become obsolete and suffer in profits.

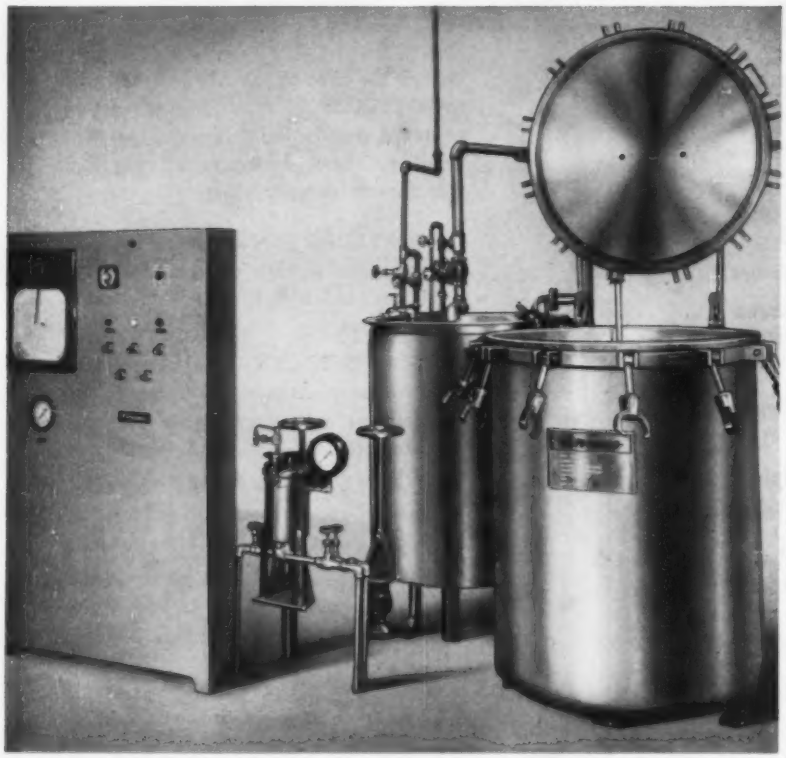
Operators should be encouraged to contribute suggestions along this line and each suggestion should be evaluated on its own merit. Often, suggestions from the operator can open a door for the research and development department and result in cost savings.

Education of the Employee. Probably one of the most lucrative programs for cost reduction is the education of each individual in the finishing plant in his duties and responsibility in cutting cost. The individual operator, if properly indoctrinated, can effect a considerable saving by reducing waste in chemicals, rags, etc., but to accomplish this he must be convinced that in so doing he is helping himself by helping the company.

One plant recently placed white cloth beneath its printing machines and periodically gave a prize for the cleanest cloth. In addition the management was careful to point out the savings in color paste to the employees. There are numerous savings such as this that can be realized if properly brought to the attention of the operators. An educational program in costs patterned along the lines of the safety program used by most plants can show a tremendous return in many plants.

In order to get all possible profit from the textile finishing plant it is necessary to study the whole operation, along with all auxiliary operations and utilities, else a saving in one operation may be detrimental to another. The starting point for such a program is an up-to-date set of plans showing each machine location and all process routing through the plant.

Armed with this plan the engineer can supplement it with other pertinent data and suggest modification and new approaches to problems that can usually put more of the invested dollar in the profit column and assure perpetuation and growth of operation.



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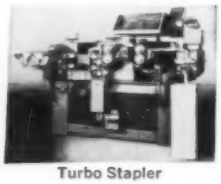

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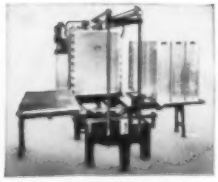

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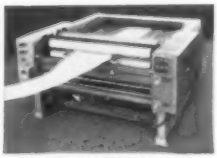

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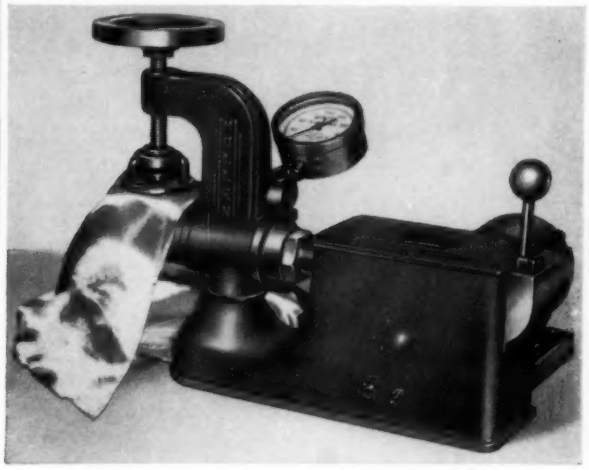

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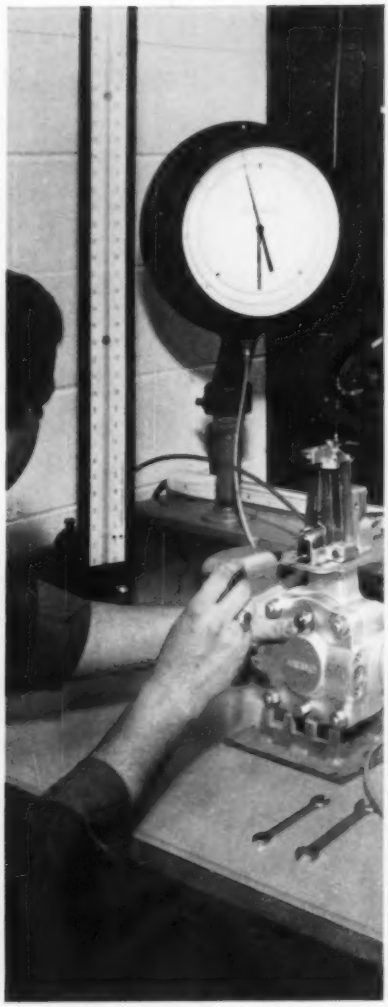

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AW (powder)		+	1% in H_2SO_4	5	130°F*	Fast	Good
CB-32 (liquid)	+		15%	1	70-130°F	Moderate	Excellent
FFG (powder)		+	1%	5	130°F*	Fast	Good
GS-33 (liquid)	+		15%	3	70-130°F	Moderate to Fast	Very Good
HS-31 (liquid)	+		15%	4	70-130°F	Moderate	Excellent
HS-71 (powder)	+		15%	4	70-130°F	Moderate	Excellent
MS-31 (liquid)	+		10%	2	70-130°F	Fast	Good
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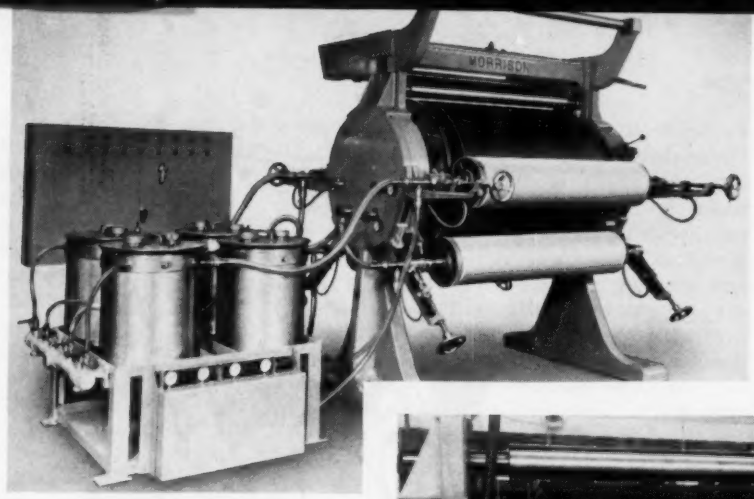
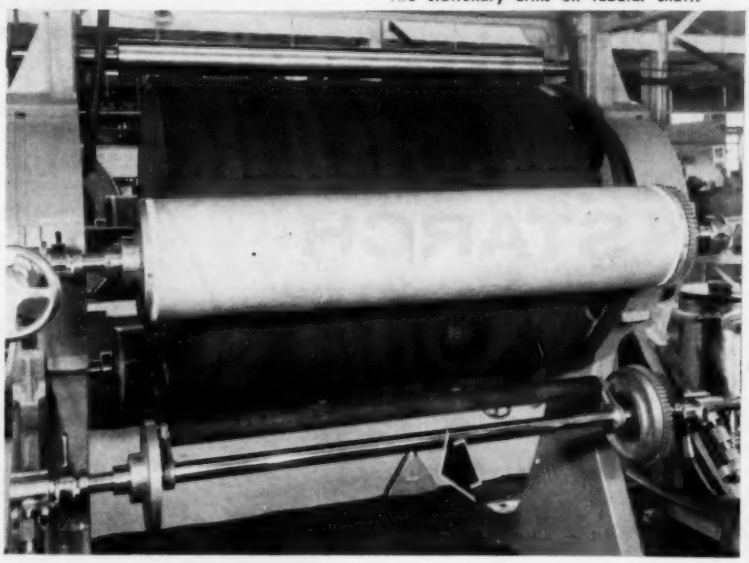


LEFT: The rotary screen printing machine has no doctor blades, color boxes, furnishing rollers, or lapping. Color paste is pressure-fed from supply tanks.

BELOW: Close-up of machine with one screen removed shows tubular shaft on which screen revolves and through which color is fed. Note inverted funnel-shaped outlet for color paste (arrow); and inking roller, which is held against screen by two stationary arms on tubular shaft.



Rotary Screen Printing

A report on the principles and applications of the latest development in automatic screen printing

by Otto F. Habel

General Product Line Manager
General Dyestuff Co., Division
of General Aniline & Film Corp.

Exclusive

THE STORY of mechanical screen printing today is not complete without describing the progress that has been made in perfecting rotary screen printing. Indeed, this method of printing must be considered the latest and most important achievement, because of all methods of applying color by screen, it is clearly the most productive. The intent of this paper, then, will be to discuss the important features of a machine, known in the trade as the Morrison Rotary Screen Printing Machine*, which has been designed for continuous operation.

Over the years, many attempts have been made to extend the principle of rotary screen printing to commercial practice; as witnessed by the large number of patents that have been issued for various approaches to this goal. One might say that ever since Thomas Bell, the Scotsman, received a patent in 1783 for printing by means of engraved copper rollers, attempts have been made to utilize rotary screens—primarily to increase speeds of operation.

Through originality in design, and through continual perfection of screen engraving techniques, the Morrison machine makes possible high speeds of operation.

*Manufactured by Morrison Machine Co., Paterson, N. J.

Few Skills Needed. In its simplest form, the machine consists of equipment arranged for operation on the principle of the roller machine, in which intaglio-engraved copper rollers are mounted around a main cylinder. But in place of the solid copper rollers, there are engraved cylindrical screens with free space within. These are mounted around a pressure roller of cast iron construction, covered with a thickness of rubber to provide a resilient printing surface. In operation, the fabric moves between the pressure roller and the cylindrical screens.

Color paste is applied to fabric

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from within the cylindrical screen by means of a stationary inking roller, in contact with the screen, which allows a uniform quantity of color paste to pass through the screen's open areas. The inking roller is held in a fixed position by two stationary arms, which extend from a stationary tubular shaft (about which the cylindrical screen rotates) and through which color paste is fed as required.

In essence, the steel or rubber inking roller performs the function of the sharp-edged doctor blade in roller printing; or the function of the squeegee in hand and mechanical screen printing operations.

The accompanying photographs suggest the simplicity of operation—doctor blades, color boxes, and furnishing rollers are not part of the color-application equipment. Nor is a thickness of lapping necessary to give the pressure roller additional elasticity, as required in conventional roller printing. The machine is rigidly supported by a heavy, cast iron frame, designed to give smooth operation. The cylindrical screens may be positioned from side to side, and up and down at either end, to obtain the proper fit or register.

Color paste is fed by air pressure to each cylindrical screen from supply tanks, located alongside the machine. (Machines accommodating more than eight colors can be built.) The quantity of paste contained within each screen is maintained at a desired volume by instrument control, being fed according to the requirements of each design.

The machine provides the necessary devices and instrumentation for maintaining and controlling pressure on the fabric as it passes between the pressure roller and the individual cylindrical screens, notwithstanding variations in thickness of material. Such accurate control of pressure is essential to achieve and reproduce the desired printed effect. Materials of sheer, medium, and heavy constructions can be printed, and the machine is particularly suitable for printing terry toweling and flannels.

All dyestuff classes and pigmented emulsions can be used; and conventional printing pastes and thickeners are readily adapted. Since the color paste is deposited on fabric without the crushing effect common to roller printing, some precautions must be taken in the initial stages of drying to prevent color mark-off. The fabric cannot pass over drying cans immediately after printing. It requires a partial drying, either in a hot flue or by drying lamp. Once the danger of color mark-off has passed, conventional equipment can complete the drying.

Downtime Low. A discussion of mechanical screen printing inevitably leads to a question ever-present in the minds of roller printers: How fast can the machine operate? Speeds of 80 yards per minute are possible, but the average speed for the long run is in the neighborhood of 40-50 yards per minute. As in roller printing, speed is influenced by many factors, including pattern and fabric, and by the available drying facilities.

Professional skills of the high degree required in roller printing need not be developed; though some skills are necessary, as in positioning screens for accurate fit and in applying proper amount of pressure to screens to achieve the desired printed effect.

Much greater skills are required in the art of preparing screens and in applying the science of electroplating, as can be visualized from the following steps required in screen making:

1. The screen, of phosphorbronze or Monel metal construction, is stretched out on a wooden frame.
2. The screen is sensitized and engraved by photographic techniques.
3. The screen is reinforced by electroplating.
4. Individual wire threads of the screen are joined by soldering to form a cylindrical screen. (Electroplating enables prolonged operation without loss of cylindrical shape.)
5. Final electroplating imparts chemical resistance to the screen.

The perfection of techniques for screen making, as well as the science of electroplating, have made the Morrison machine a commercial reality. In Great Britain, for example, more than 15 machines of a type similar to the Morrison machine are reportedly in use. British stylists have already become disciplined to the limitations imposed by the soldered seam, that runs in a wavy line across the screen. Despite the fact that striped and blotch patterns cannot be executed, the variety of patterns still possible is enormous.

As in screen making for hand and mechanical screen operations, the guiding principles for selecting proper mesh are essentially the same: For printing finer lines and objects, a finer mesh is required; while for printing objects of larger area, a coarser mesh is needed.

The Outlook. In bringing this brief review to a close, it might be worthwhile to point out again those aspects of the Morrison machine which are of practical significance and advantage. These may be set forth as follows:

1. The absence of doctor blade, color box, and furnishing brush allows patterns to be set up and changed in a fraction of the time required in roller printing. There is a further reduction in downtime through a more rapid cleaning of screens.
2. The absence of the doctor blade eliminates the troublesome and costly defects that it causes in roller printing; such as tarnishing and streaking of white grounds, and streaking of dischargeable grounds.
3. Costly and time-consuming filing of doctors is eliminated. Nor is there a need for a lint doctor.
4. Color contamination, as it occurs on the roller machine, is not possible.
5. A repeat size of up to 72″ is practicable, attesting to the soundness of screen making and electroplating techniques, and to the design of the cylindrical screen itself, which has a satisfactory operating life.

Rotary screen printing cannot in every instance give the execution of fine detail that skillful engraving and printing can accomplish in roller printing. Nevertheless, its use is spreading. While there are only a few installations in this country, there are many throughout Europe and South America, besides the installations already mentioned in Britain.

Some effects of the pitting of dyeing machine metals

■ IMPROVEMENTS in the quality of stainless steels now being used for manufacturing dyeing and processing machinery have greatly reduced the vexing problem of pitting and roughening of the surfaces. However, with the introduction of hydrophobic fibers (high polymer) the industry has increased its use of corroding chemicals, such as sodium chlorite, and therefore some corrosion does occur despite these improvements.

Rubbing against the corroded or pitted stainless steel can cause scuff —or abrasion marks—in fabrics of all types. Wool fabrics and fibers were used for the illustrations in this article, but all other fibers exhibit a similar effect. These marks appear lighter, or weaker in shade, as though less dye had been absorbed.

Microscopical examination, however, shows that the fibers in these lighter areas have been shredded and more fiber surface has been exposed. This causes the fiber to reflect more light and thus to appear weaker in shade. When Orlon and Dacron fabrics are rubbed over the pitted metal, the scuff-mark appears lighter and greyer, probably because some of the fibers are shredded while others have been cut off as though with a razor blade.

Microscopical examination of the pitted metal shows that some parts have been dissolved away, leaving tiny, comparatively deep caves. Razor-like edges appear on those sections of the metal surface which are more resistant to corroding chemicals. When a piece of dyed wool fabric was rubbed over the pitted metal, light "resist" marks were produced as shown in **Figure 1.**

Fig. 1

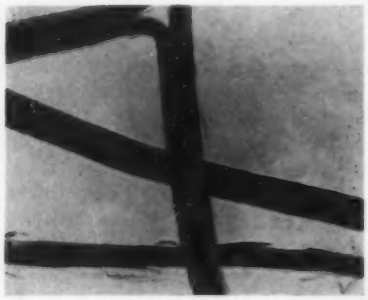

Fig. 2

Fig. 4

Fig. 3

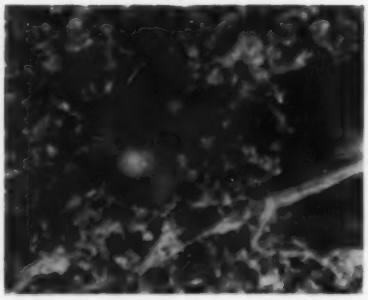

Figure 2 is a photograph of wool fibers removed from the light areas shown in Figure 1. Note the shredded appearance of these fibers. **Figure 3** is a photomicrograph taken through the microscope at 200X magnification. It shows the caves bridged by razor-like edges of undissolved metal, which cut or shred these fibers.

Figure 4 is a radioautograph produced by filling the dissolved-out areas with a finely-powdered radioactive material which emits gamma rays. The surface of the metal is wiped clean, then a negative is placed on the metal (held down by a heavy lead weight) and allowed to remain in direct contact with the metal surface for 48 hours. In this case, we used the radioactive material Uraninite (which is less dangerous to handle). The gamma rays emitted by the mineral remaining in the caves produced an image on the negative as shown in Figure 4. Each bright speck on the photograph is a cave filled with radioactive mineral. The dark areas are parts of the metal surface that had been wiped clean. The larger area shown in the lower right hand corner is a badly pitted section.

Excessive pitting of stainless steel may be retarded by periodic buffing, polishing, and by a passivation treatment with sodium bichromate and nitric acid. The elimination of corrosive chemicals, wherever possible, of course helps to prolong the satisfactory life of stainless steel. Also, molybdenum fortified stainless steel has a longer serviceable life.

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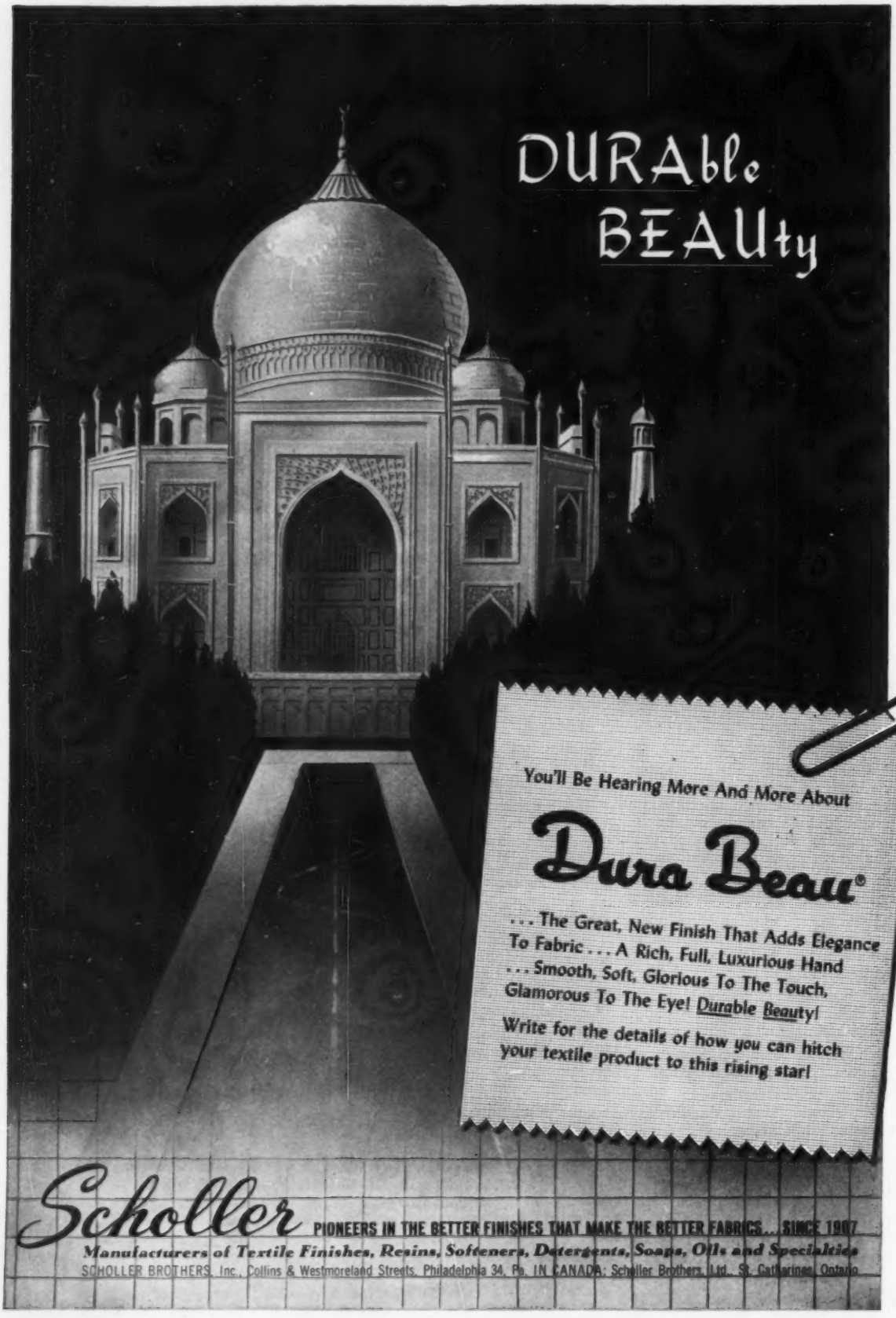
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COLORING, BLEACHING, AND FINISHING DEVELOPMENTS

Color Computer. Developed by a Japanese company a "color computer" consists of a computer coupled with a spectrophotometer. The device is said to make color measurements more accurately and more rapidly than possible with conventional equipment. Suggested applications are for use in textile dyeing and finishing as well as in dyestuff manufacturing control operations.

Wool Yarn Shrinkage. An interfacial polymerization technique developed by the U. S. D. A. Laboratories in Albany, Calif., for the formation of an anchored polyamide film on the wool fiber surface to prevent fabric shrinkage has been proposed for use on wool yarns. An advantage claimed is that yarn strength is increased by about 10%.

Bleaching Process for Colored Cotton Yarn Fabrics. A new acid-peroxide process for bleaching colored cotton piece goods is not corrosive to any stainless steel processing equipment and is said to yield excellent color brightness. The chemicals are easily removed from the processed fabric and there is no scale formation on the equipment used. Naphthol reds and blacks as well as certain vat dyestuffs normally sensitive to bleaching can be handled by the new technique without mark-off or change in color tone.

Improving Nylon Stockings or Tricot Fabrics. A British patent discloses use of ultrasonic waves in the passage of fabrics through a bath containing a shrinking agent such as phenol to make the yarn filaments "more elastic," "softer," and to increase their frictional resistance.

Making Whiter Fabrics. A North Carolina inventor has patented the use of up to 7% of permanently blue fibers along with undyed fibers in yarn blends to impart a predominantly white appearance to fibers made from such yarns.

Spot-Welding Nylon Fabrics. A U. S. patent has been issued to a Japanese inventor for a method of spot-welding fabrics of nylon or similar yarn through use of high frequency current after moistening the superimposed fabric layers with water or water and glycerine mixtures.

Dye Production Slumped in 1960. U. S. production of dyestuffs in 1960 came to 156 million pounds—8% less than in 1959 but 11% more than the amount reported in 1958. Four classes of dyes accounted for nearly three-quarters of total production: vats, 30%; sulfurs, 20%; directs, 15%; and acid dyes, 9%. The textile industry uses about three-fourths of total dyestuff production. See accompanying table for details. (Figures for 1959 appeared in TEXTILE INDUSTRIES for January 1961, page 31.)

Bonding Polyester Fibers to Rubber. Imperial Chemical Industries Ltd. has obtained a U. S. patent on a process for bonding polyester fibers to rubber by first treating them with a selected polyisocyanate, then applying an aqueous adhesive system based on butadienevinyl pyridine latex and a resorcinol-formaldehyde solution.

Experimental Wool Finishing. The experimental wool finishing plant to be constructed in the U. S. by the International Wool Secretariat (see TI for August 1961, page 140), will be located at Lowell Technological Institute, Lowell, Mass. The plant will be used to

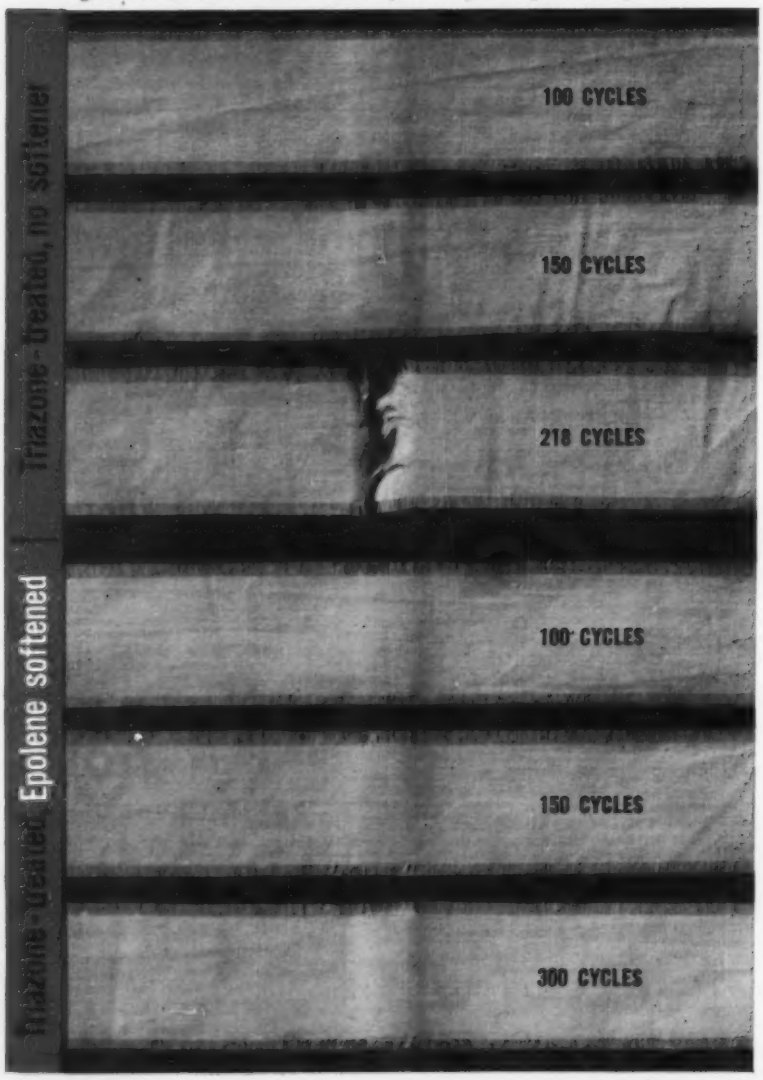
U. S. Production and Sales of Coal-Tar Dyes, 1960

Class of Application	Production 1,000 lb	Sales Quantity 1,000 lb	Sales Value $1,000	Sales Unit Value[1] per lb
Acid	14,306	12,715	24,185	$1.90
Azoic dyes and components:				
Azoic compositions	2,607	2,337	3,576	1.53
Azoic diazo components, bases (fast color bases)	1,000	783	1,224	1.56
Azoic diazo components, salts (fast color salts)	1,546	1,496	1,649	1.10
Azoic coupling components (Naphthol AS and derivatives)	1,757	1,566	3,326	2.12
Basic	6,747	6,071	13,861	2.28
Direct	23,075	21,956	32,667	1.49
Disperse	6,548	7,053	14,226	2.02
Fiber-reactive	291	211	973	4.61
Fluorescent brightening agents	7,492	7,264	18,393	2.53
Food, drug, and cosmetic	2,417	2,341	9,479	4.05
Mordant	3,975	3,637	4,773	1.31
Solvent	6,479	6,295	9,568	1.52
Sulfur	31,022	30,558	8,233	0.27
Vat	46,574	43,412	45,772	1.05
All other[2]	60	43	202	4.70
TOTALS	155,896	147,738	192,107	1.30

[1]Calculated on rounded figures.
[2]Includes oxidation bases, ingrain dyes, and miscellaneous dyes. Statistics for these groups of dyes may not be published separately because to do so would disclose information received in confidence.

Source: U. S. Tariff Commission

The Stoll-Flex Abrasion Test demonstrates the increased strength given to a resin-treated cotton fabric by an Epolene softener.

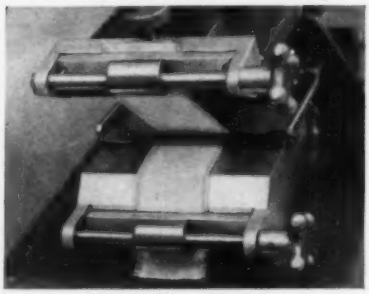


IT is axiomatic in the textile industry that the finishing resin alone does not a wash-and-wear fabric make. In fact, the variables are many, and often complex.

Of primary importance is selection of the softener. If properly chosen to match the specific type of finishing resin to be used, the combination can provide the optimum in tear strength, abrasion resistance, crease recovery, hand, and sewability for the treated fabrics.

Eastman offers three emulsifiable types of polyethylene resins for use as softeners... Epolene E-10, Epolene E-11, and Epolene E-12. These low-molecular-weight polyethylenes are suitable for either nonionic, anionic, or cationic systems, easily forming emulsions that are stable and low in color.

Epolene polyethylene emulsions have been evaluated under operating conditions with all of the principal wash-and-



Stoll-Flex Abrader

wear resins in use today. These include triazone, triazene, melamine formaldehyde, methylated melamine formaldehyde, dimethylol ethylene urea, and methylated urea-formaldehyde type finishing resins. The results of these test procedures are available to aid you in selecting the right softener for your finishing requirements.

For further information about Epolene textile emulsions, their preparation and use, contact your Eastman representative, or write Eastman Chemical Products, Inc., subsidiary of Eastman Kodak Company, Kingsport, Tenn.

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accelerate development work on a wide range of new processes for producing easy-care characteristics in all-wool fabrics and garments. First priority will be machine washability in woven goods.

Printing Polyester Yarn Fabrics. A German concern has patented a method for printing and removing portions of the fabric in the printed areas by using a guanadine carbonate and thiodiglycol decomposing agent as the printing medium.

Better Laundering of Fiber Glass. Many of the laundering procedures used for fiber glass drapery fabrics by professional laundering establishments and building maintenance personnel are both uneconomical and in many cases extremely harmful to the fabrics, according to a textile consultant working with the American Institute of Laundering. Practices to avoid: Drycleaning, ironing, dragging over rough floors, using alkalies or chlorine bleaches in laundering, extracting, tumbling, and wringing.

Slippery Fabrics. Process for post-treatment of laminated fabrics to make them slippery is announced by Reeves Brothers, Inc. "Curon E-Z" is said to make the fabrics easier to sew, since they glide and slide easily under the sewing-machine plate.

Cobalt for Finishing. Two cobalt compounds—cobaltous metaborate and cobaltous hydroxide — will have their potentialties in cotton finishing extensively studied as a result of preliminary screening under the supervision of U. S. Department of Agriculture's Southern Regional Research Laboratory. The compounds are believed to have possibilities in mildew- and rotproofing, weatherproofing, in imparting resistance to sunlight and atmospheric contaminants, and in water repellency treatments.

Don't Wash Wash-and-Wear? The "myth" that wash-and-wear garments require "little or no touch-up" has been exploded by experimentation at the University of Maryland, according to the National Institute of Drycleaning. UM's research study showed that men's wash-and-wear suits look and feel better, keep their color, and don't shrink if they're drycleaned rather than laundered. Reason: Drycleaning removes both water—and oil-borne soil, spots, and stains; home laundering may cause dyes to bleed, fabrics to shrink and lose their hand.

New Dyes and Chemicals

◆ *For more data on any of these dyes and chemicals, write supplier or use postage-free card on page 173, listing in space provided the code (I-1, I-2, etc.) in parentheses at end of descriptions.*

Mercerizing Penetrant. A noncresylic acid mercerizing penetrant, "Sul-Fon-Ate BL Acid," is now available in commercial quantities from Tennessee Corp. The product functions as a wetting agent and penetrant in caustic soda strengths up to 25%. It is water-soluble and its wetting power is not impaired by exposure to concentrated caustic at elevated temperatures. Carbon, cotton waxes, and starch by-products present in grey mercerizing caustic have no harmful effects on its wetting action. *(I-1)*

Crosslinking Finish. Excellent durability to laundering and drycleaning, superior stability, high film strength, and good abrasion resistance are characteristics claimed for a new self-crosslinking acrylic resin recently announced by Rohm & Haas Co. "Rhoplex HA-16," alone or in combination with other resins of the Rhoplex HA series, may be crosslinked simply by adding a latent acid catalyst. The use of oxalic acid is recommended only where simultaneous drying and curing is intended. *(I-2)*

Delustering Agent. High degrees of delustering and flexibility are the prime characteristics of "Liq-Dull 63," according to W. F. Fancourt Co. It is also said to have unusual leveling ability along with delustering, and to give flexible body with an even drape to woven or knitted fabrics. *(I-3)*

Lubricant for Foam. "Soluslip SL" is a 35% active silicone emulsion for lubricating the polyurethane surface of laminated fabrics; it is available from Soluol Chemical Co. It is readily dilutable with cold water to obtain the 6-10% concentration considered adequate for most lubrication requirements. *(I-4)*

Softeners. Two new liquid softeners available from Tennessee Corp. are designed for cotton and cotton-blend fabrics. "Tennesoft 23-59" and "Tennesoft 29-73" are said to have high initial absorbency, which is retained after washing; freedom from discoloration due to heat or ultraviolet light; and compatibility with optical whites, thermosetting resins, and bacteriostatic agents. *(I-5)*

Nylon Dye. "Supernylite Cerise BL" is a new Althouse Chemical Co. dye for producing brilliant shades on nylon in the red-violet range. *(I-6)*

Polyolefin Resins. Eastman Chemical Products Co. has made four additions to its line of Epolene low-molecular-weight polyolefin resins. "Epolene C-11" is a high-density nonemulsifiable resin with excellent greaseproofness, film strength, and low-temperature flexibility. It is designed primarily as a modifying resin for use with low-molecular weight polyethylene, polyterpenes, and hydrocarbons. "Epolene C-12" is a low-cloud-point flexible resin. "Epolene E-13" was developed for use where a low odor level is required. "Epolene E-14" is for use in textile emulsions. *(I-7)*

Wash-and-Wear Resin. A new cyclic reactant resin, "Onyxset LC," is available from Onyx Chemical Corp. It is claimed to have greater shrinkage control and scorch resistance, and less residual odor than triazone resins. *(I-8)*

Leveling Agent. "Levelol 74" is a new leveling and retarding agent for wool and wool blends, available from Onyx Chemical Corp. *(I-9)*

Resin finishing cotton knits

(from page 80)

quired to do this is automatically registered.*

Resistance to stains may be determined by placing drops of such products as coffee, soda, tomato juice, or milk on the surface of the fabric and after 20 to 30 minutes flushing the staining materials with water. Properly treated fabrics will show no staining.

Versatile Properties from One Bath Application. A basic formula for obtaining shrinkage control in knit goods may contain the following:

15% Aerotex Resin 44 or Resin 23 Special
3.0% Aerotex Accelerator MX
1-2% Cyanalube Softener TSI Special
80% Water

This formula may be modified in many ways to impart various functional properties to the fabric.

Water repellency and stain resistance can be obtained from one-bath applications with good durability to repeated washing. The hand of the fabric can be readily varied to meet a wide range of requirements. These durable water repellents can be of the resin type, such as Permel Resin B; or of the silicone-oil emulsion type, such as Aerotex Water Repellent S. The addition of these water repellents to the resin bath in no way affects shrinkage control characteristics; in most cases, it helps the bursting strength and decreases the yarn splitting during sewing.

A typical formula which may be used is as follows:

10% Aerotex Resin 44 or Resin 23 Special
8.0% Permel Resin B
1.0% Aerotex Accelerator AS
0.5% Aerotex Buffer DCY
81.5% Water

A formula based on silicone is as follows:

5.0% Aerotex Resin 44 or Resin 23 Special
5.0% Aerotex Resin MW or Resin M-3
3.5% Aerotex Water Repellent S
1.0% Aerotex Accelerator UTX
1.0% Aerotex Accelerator S
0.5% Aerotex Buffer DCY
84% Water

*These methods are described in "ASTM Standards on Textile Materials," published by American Society for Testing Materials; Standard Methods for Testing and Tolerances for Knit Goods, ASTM Designation D 231-46. The apparatus is described in Standard Specifications for Textile Testing Machines, ASTM Designation D 76-53.

Durable oil repellency, as an additional property in resin-treated fabrics, is currently being evaluated. It can also be achieved from a one-bath application without adversely affecting any of the physical properties of a resin solution. A formula for obtaining resistance to oil-borne stains, as well as to water-borne stains (including rain), includes a fluorochemical, as follows:

10% Aerotex Resin 44 or Resin 23 Special
5.0% Permel Resin B
1.5% Scotchgard FC-208
0.5% Aerotex Buffer DCY
0.02% Decaresol Wetting Agent NI Conc
1.0% Aerotex Accelerator AS
82% Water

Controlling perspiration odor through the use of chemicals that resist odor development in fabrics has been a new market development. This control can be obtained by adding Aerotex Purifying Agent No. 1 to the resin bath in concentrations of 2 - 6%. This finish is durable to as many as 50 washes and is currently being used in many mills on fabrics intended for sportswear, outerwear, and underwear.

New end uses call for variations in the hand of cotton knits. Women's wear fabrics, for example, may require a smooth, light hand; whereas men's outerwear fabrics may call for a firmer, fuller hand. Smoothness can be obtained by adding wax emulsions, polyethylene softeners, or modified vegetable oils. Permel Resin B is widely used, not only as a water repellent but also to impart durable softness. Usually, 1 - 3% of these products in the resin bath is sufficient.

Body or fullness can be obtained by the use of certain modified urea formaldehyde resins. Example products are Aerotex Resin 802, Aerotex Resin 803, Aerotex Resin DM, and others. Firmness can be imparted by using polyvinyl acetate, such as Aerotex Resin 161; or modified urea formaldehyde, such as Aerotex Resin 803, or Aerotex Syrup 250 Conc. The amounts to be used depend on specific requirements.

Skillful blending of these products can provide an endless variety of hands.

Polyurethane Foam Lamination. A very recent development of particular interest to the cotton knit goods industry utilizes polyurethane foam, which is laminated to the fabric either by application of gas flame and compression, or by the use of adhesives. The foam itself provides a hand and character to the cotton knit, quite different from anything seen before.

Contrary to wide belief, shrinkage control of the knitted fabric is extremely important in laminated fabrics. This can readily be seen from the fact that the cotton fiber itself will shrink unless it has been resin treated. Thus, a foam laminated knit would present a very mussy and wrinkled appearance unless the fabric has been resin treated for stabilization.

Cotton knitted fabrics can be finised to acquire all of the properties described in above paragraphs, either before or after lamination. Treatment before lamination is desirable in most cases. However, there is at least one instance when treatment after lamination is preferred. The laminate is treated with a lubricant, such as Aerotex Water Repellent S, to prevent it from sticking to the sewing machine as it is pulled during garment manufacture.

Summary. The finishing of cotton knit goods to obtain functional finishes has been developed in a little over ten years. Early attempts in this direction were hampered by unsuitable equipment and products that did not fully meet the needs of the market.

As more suitable equipment and better products were introduced, and improved technology was developed, the types of patterns and constructions that could be treated increased.

Earlier finishes were applied principally to achieve dimensional stability. Today, combination finishes provide, in addition, easy-care fabrics, water and oil stain repellency, perspiration odor control, and other desirable properties.

Earlier products used to impart dimensional stability were based on derivatives of urea formalde-

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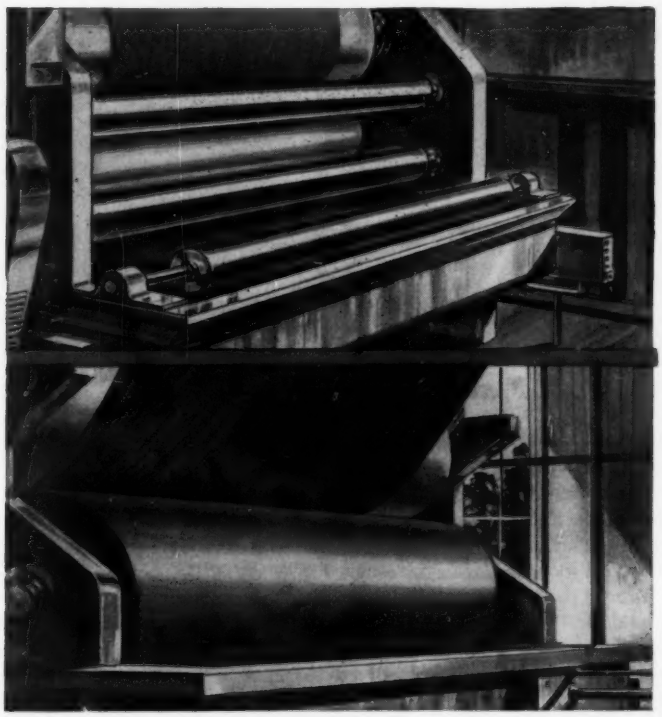

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hyde or melamine formaldehyde. Finishes obtained with urea formaldehyde were not durable. Both types of products were adversely affected by chlorine bleaching. Products in use today have overcome the disadvantages of previously used chemicals.

Testing procedures are extremely important. In order to be valid, a test method should predict in a short time what will happen after a long time in actual use.

The future appears bright for finishers of cotton knit goods. New patterns, new constructions, and new properties will lead to increasing end uses for these fabrics.

Design for better flash aging

(from page 69)

saturated with condensation, making it almost impossible to eliminate water spotting.

It is much more practical to maintain as low a steam injection pressure as possible, and control the operating temperature by means of the top heating coils rather than attempt to regulate temperature by the injection of higher-than-necessary steam pressures.

Air Lock Important. Water spotting will also occur if cold air is allowed to enter the machine. It is, therefore, necessary to maintain a very tight chamber and to provide an air lock of good design at the entrance section of the ager. This air lock is a very important part of the machine, and if properly constructed will prevent air from entering the ager and also prevent steam from escaping. Heated gutters must be employed around the opening of the lock, to trap and flash back into steam any condensate that makes its way to this area of the machine.

The entrance section of the ager should be placed as close as practical to the chemical padder and should be heated to the proper operating temperature so that reaction will take place as soon as possible after the fabric to be processed leaves the padder.

The exit section generally, although not always, terminates below the water level of the first wash box and is usually made of stainless steel to prevent corrosion and to eliminate contamination of the water. An air lock is automatically attained with this type of installation.

Many flash agers use the same type of exit section as is used at the entrance end. An advantage with this type of arrangement is that the first wash box is not blocked by the exit section and the washer can be used for other processes. Such an installation, however, requires an additional exhaust duct and fan and increases the cost of the machine slightly.

Selecting An Ager. An unlimited number of ager configurations may be used and the type selected will depend mainly on the space available for the unit. The installation is usually planned so that it will not be necessary to move any of the existing equipment that is to be used in the range make-up. One of the best space-saving arrangements is to mount the ager directly over the washer if enough head room is available. This is not always possible, of course, and consideration must be given to some special shape for the machine.

Where there is little floor space and ample room overhead, the "A" type of ager shown in *Figure 1* (page 69) is the most practical type of installation. This type of ager is somewhat less efficient than the conventional unit shown in *Figure 2*; its larger cross section requires more heating capacity. It is much more versatile, however; Since additional rolls can be installed at the top and bottom of the ager, it may be used as a standard vat ager.

As stated in previous articles, reaction takes place in 10 to 30 seconds depending on the fabrics and colors being used. Actual practice has shown that the required exposure time is very close to 30 seconds in most cases.

With either the horizontal or vertical flash ager, the entrance and exit sections are considered as part of the total holding capacity required for determining production speeds obtainable with a particular machine.

It is necessary to drive all of the ager rolls, since the fabric being run makes only a straight line contact with them. Without being driven, the rolls will not turn; and since they are not usually heated, condensation will form on the underside creating another water spotting potential. Also, cloth tension may be rather high and mark-off will become a problem. Generally, the ager rolls are tied directly to the driven chemical padder roll by means of roller, chain, and sprockets.

The padder is a very important part of the flash ager range, and a good one should be used. This would be of the conventional type but fitted with one stainless steel roll and one rubber roll. The position of the stainless roll is such that the face of the fabric being padded comes in contact with it. The roll diameter should preferably be 18″ or larger; the rubber roll should be covered with about ¾″ rubber having a Shore Durometer hardness of 55-60.

The type of mechanism used to apply roll pressure is unimportant but should be capable of loading to 250 - 300 pounds per linear inch.

The padder should be capable of being threaded either for nip or dip operation and equipped with a pad box holding approximately 7 or 8 gallons.

During the past several years, many "home brew" installations have made with unsatisfactory results, as far as the ager itself is concerned, mainly because proper consideration was not given to the foregoing points.

While this may have deterred some mills, a great many finishing plants throughout the United States and abroad are producing thousands of yards of material daily with the flash ager process.

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For further information use Handy Return Card, Page 173

Now a Permanent Flat-Press for Worsted!

First details of a new mill development

by Edwin G. Sutcliffe
Chief Chemical Engineer
Samuel Hird & Sons, Inc.
Garfield, New Jersey

Exclusive

EASY-CARE is highly attractive to the American housewife when it is applied to garments she has been laundering at home, but it becomes something less than attractive if it brings her extra work in taking care of the family's worsted clothing. These items have traditionally been the drycleaner's responsibility. However, she is quick to brighten at the prospect of a substantial reduction in the number of annual trips to the cleaner which a garment must make to keep it in wearable condition.

Garments usually go to the drycleaner not because they are objectionably soiled, but because of their mussy, wrinkled appearance. And that is what will concern us here—a description of laboratory and mill work directed at producing a permanent flat-press on worsted suiting fabrics.

In the Laboratory. The logical approach to our objective seemed to be in applying to the entire fabric the same type of reagents used commercially in producing permanent creases in wool garments. *Table 1* shows the solutions applied on a laboratory scale to samples of Hird Style 216-37 worsted fabric.

The test procedure used was to submerge a ten-gram sample of the cloth in 400 ml of the solution (cold) for three minutes, remove, squeeze out the excess between two glass rods, and steam the wet sample for five minutes. The sample was then pressed dry. Each sample was tested for resistance to wrinkling by washing in the Launder-Ometer through a standard cycle and then air drying.

All of the samples from *Table 1* showed improvement over the blank. Samples 5 and 7 were chosen as showing the most promise. As Sample 5 was far more economical, it was picked for a mill trial.

In the Mill. The first mill trial was run at the Hird plant on September 30, 1960. A full 52-yard piece of Style 216-37 was selected for the trial run. This is a 16.8 oz/yd material normally used for postmen's uniforms.

The piece was divided into four sections. Section A was processed as a control without any effort at stabilization.

The following solution, based on Sample 5 was made up and added to the dip tank of a padder:

Solution A

40.8 lb Onc-et B
1.04 lb Triton X-100
2.00 lb monoethylamine boron trifluoride
Made up to 50 gal

The Triton X-100 was dissolved in a pail of warm water and added to the bulk of the water in large mixing tank. The Onc-et B was added slowly, with stirring, and

FIG. 1. Trousers made from Samples A-1 (control, right) and B-2 (treated, plus Si-Ro-Set process, left) were laundered in a home agitator-type washer and tumble-dried. Note superiority of treated trousers in regard to appearance and lack of puckering.

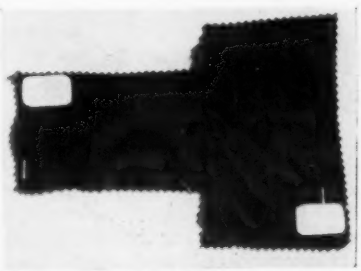


FIG. 2. Results of giving a hand wash to worsted fabric. Sample at left was treated by the silicone flat-press process; sample at right was given the normal Cravenette silicone water-repellency treatment.

FIG. 3. Results of vigorous scouring of worsted fabric in high-soap-content solution, on a wheel. Sample at left is a product of the silicone flat-press process; sample at right had normal silicone treatment.

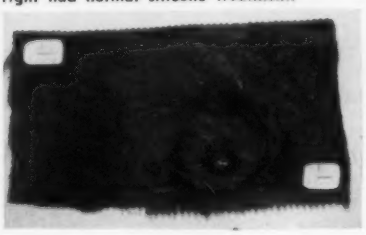


TABLE 1. Solutions Applied on Laboratory Scale

Reagent Sample No.	Onc-et B[1] g	Alcohol ml	Cyanatex 3106[2] g	Triton X-100[3] g	Acetic Acid 56% g	MEBF[4] g
1	50			0.25		
2	50	10[5]		0.25		
3	50	10[6]	0.75			
4	50			0.75		1.0
5	50			0.35		0.5
6	50			0.35		
7	100			0.35		0.5
8	100			0.35		
9	50			0.75	3.0	0.5
10	50			0.75	1.5	1.0

Final volume of each solution, 1 liter
[1]Monoethanolamine sulfite
[2]Anionic wetting agent (alkyl sulfosuccinate)
[3]Nonionic wetting agent (alkylarylpolyether alcohol)
[4]Monoethylamine boron trifluoride
[5]Denatured, 3A
[6]Butyl

finally the dissolved fluoride.

The remaining three sections of the cloth were processed as follows:

Section B

1. Padded through double dip and squeeze roll; pickup of 60% on starting weight.
2. Run directly onto a semi-decater, steamed 5 minutes, vacuum extracted for 8 minutes.
3. Run through shrinker-dryer.
4. Put through normal decating operation.

Section C

1, 2, and 3 same as Section B.

4. Put through normal hot rotary press.

Section D

1. As section B.
2. Run in dolly-washer 5 minutes at 80 F in clean water only.
3. Dried in open width on shrinker-dryer, maximum temperature 170 F.
4. Run through cold rotary press.

The fabrics were submitted to a pants manufacturer, experienced in the application of the Si-Ro-Set process* for production of permanent crease.

Pants were made up from each of the four sections, (1) in the normal way, and (2) with the addition of the Si-Ro-Set treatment. A third pair of pants was also made up from Section D with an extra steaming during pressing.

The garments were evaluated over an examiner's perch by three unbiased observers. Garments were judged for hand and general appearance. Without exception those fabricated from Sections B and C were judged superior.

Appearance Tests. An endless belt was made in an open piece dye kettle and a sample of each type of pants was fixed to the belt. The solution in the kettle was made up by dissolving 1 lb of Cyanatex 3106 in the water and raising the temperature to 100 F. The kettle was run for ten minutes.

The nine pairs of pants were removed and whizzed in a high-speed centrifuge. They were then suspended and allowed to dry. Three trained observers then rated each pair, assigning a grade from 1 to 9—1 being the poorest and 9 the best:

Sample	Crease Retention	Appearance
A-1	None	1
A-2	Good	2
B-1	None	8
B-2	Good	9
C-1	None	5
C-2	Good	6
D-1	None	3
D-2	Good	4
D-3	Fair	7

Despite some discrepancies, the evidence overwhelmingly shows the value of applying the flat-press treatment in the mill. A good deal of the trouble in evaluation was due to the reactions on the cloth caused by the linings used and the cotton strip sewn to the sides of the pants.

Sample A-1 and Sample B-2 were processed through a home agitator-type washing machine and tumble-dried. Again, Sample B-2 was far superior to the others in lack of puckering and in appearance, as shown in *Figure 1.*

Water Repellency Added. At this point in the research, for simplification of processing and to assist the resistance to wrinkling, it became obvious that the combination of flat-press characteristics with water repellency would be highly desirable. Since the Cravenette process for water repellency was being applied in the mill, the Cravenette Corp. was approached. Through the efforts of this organization a silicone compatible with the Onc-et B was developed.

In the meantime, Summit Chemical Products Corp. had developed an improved Onc-et product, called Onc-et BW, incorporating a wetting agent.

After considerable testing at the Cravenette laboratories a formulation showing promise was developed:

Solution B

5% Onc-et BW
2½% Catalyst 54
5% Silicone 330
1% secondary butyl alcohol

However, on testing at the Hird laboratory it was felt that the pot life of the mix was too low and it was suggested to the Cravenette Corp. that the use of the boron trifluoride might enhance this property.

Further laboratory work followed and a formulation for mill trial was selected:

Solution C

5% Silicone 330
5% Onc-et BW
2.5% Catalyst 54
0.5% monoethylamine boron trifluoride
50 gal total volume

The J. P. Stevens & Co. organization was approached and they allotted a piece of Style 4500-7 cloth for the experiment. A section of this cloth was removed and given the normal Cravenette water repellency treatment. The remainder was padded with Solution C and routed through the mill in accordance with Section B of the

*The Si-Ro-Set process, developed by the Commonwealth Scientific and Industrial Research Organization of Australia, is based on the application of ammonium thioglycolate, followed by steaming and pressing.

previous mill run.

Cloth width at the start of the run was 62½", including selvages, and the weight of the piece was 56 lb. The pH of the solution was 6.0 to 6.5. The fabric was given a double dip in the tank. There were 40 lb pressure on the nip roll, and the time of the run was 4.45 min. Pickup was 58%.

Since the pickup was slightly below the expected 70%, a second run was made with nip pressure reduced to 36 lb. Pickup was 69.7%.

After padding and without drying, cloth was run on the semi-decator. Here it was steamed for 5 minutes (steam pressure 80 lb) and vacuum extracted for 7 minutes. Cloth was then dried on the shrinker-dryer.

After drying, the cloth was finished normally, which in this case meant treatment on the semi-decator for 3 minutes steam, 5 minutes vacuum.

The finished width of the fabric was 60". This fabric normally has a finished weight of 11.23 oz/yd, and finishes 62¼". The fabric finished with Silicone 330 and Onc-et BW had a weight of 12.1 oz/yd, a gain of 7.7% per linear yd. Little or no change in color was caused by the treatment.

Tests indicate that water repellency is better than the standard. Resistance to puckering, wrinkling, and development of a mussy appearance is increased tremendously. The finish also makes the fabric considerably more resistant to shrinking.

The table below shows the physical measurements of the control compared with those of the specially treated fabric. The tests were made in the Cravenette Corp. laboratory.

	Spray Ratings		Shrinkage	
	Before Laundry	After Laundry	Warp %	Filling %
Treated	80-100	90	5.0	3.0
Control	70-90	80	12.0	8.5

An additional inducement for the use of this type of finish is that any color changes likely to be caused by the application of the Si-Ro-Set process** for permanent crease will be induced in the plant and the change, slight in most cases, will be uniform throughout the cloth. This will therefore prevent the very objectionable condition now in existence where a change of color is introduced at the local area in which the permanent crease is developed.

Conclusion. The success of the treatment can not be over-emphasized. The accompanying photographs indicate to only a small degree the success of the treatment with respect to resistance to wrinkling and mussiness.

Figure 2 shows the results of applying a hand wash to the 4500-7 cloth. *Figure 3* shows the results of giving cloth samples an extremely vigorous scour, with a high soap content, on a wheel.

All the tests applied to the finished cloth were extremely encouraging. As a result, the various organizations concerned are in the process of wear-testing garments made from this material.

Finally, a very decisive factor is the cost per yard of the treatment. The normal Cravenette treatment runs in the neighborhood of $0.025 per yard. The present multiple treatment, under conditions of the trial run, costs $0.05 per yd. At the rate of 1½ yd for a pair of pants, this amounts to an increase of $0.075 per garment.

The ultimate value to all concerned—manufacturer, processer, and consumer—makes this cost increase the fabled drop of water in a very vast ocean.

Products Used

Onc-et B and Onc-et BW—Summit Chemical Products Corp.
Silicone 330, Catalyst 54, and Silicone WSR—Cravenette Corp.
Monoethylamine boron trifluoride — Allied Chemical Corp.
Cyanatex 3106—American Cyanamid Co.
Triton X-100—Rohm & Haas Co.

**See TEXTILE INDUSTRIES for September 1959, page 120.

Extrusion coating—new mill-developed method for coating fabrics

■ A NEW technique for producing quality vinyl coated fabrics at lower costs has been developed by Haartz Auto Fabrics Co., Boston, Mass. This technique is based on a process development of Union Carbide Plastics Company.

The new technique, extrusion coating with vinyl chloride, is reported to offer distinct advantages over knife and roller coating methods because extrusion coated plastisols are prefused. Thus, no subsequent heating steps are required and "strike through" problems are non-existent.

Extrusion coating allows use of higher molecular weight resins, produces little or no shrinkage, imposes no heat history on the cloth, and provides only moderate penetration of the fabric. It also assures a better mixing of pigments and fillers, thereby raising the weather-resistance of completed fabrics.

A wider variety of substrates can be coated with the extrusion process, including knitted materials and synthetics. Still an additional advantage is that fabrics with an extrusion coating have a higher tear strength than cloth coated by other methods, as the substrates are subjected to very little heat compared to methods where fusing takes place after coating. Also, for most fabrics, no size coat is required to control penetration and adhesion.

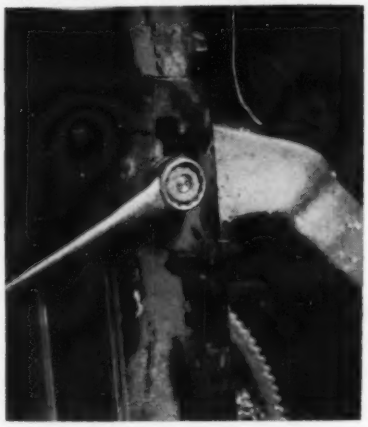
Extrusion coating also offers well-defined cost advantages to the coater which can be passed on to the end-user, the announcement stated. It requires a lower capital investment in equipment, uses no solvents, needs less plant space, and since there is no baking, requires less energy than other methods. Various colors and patterns can be used.

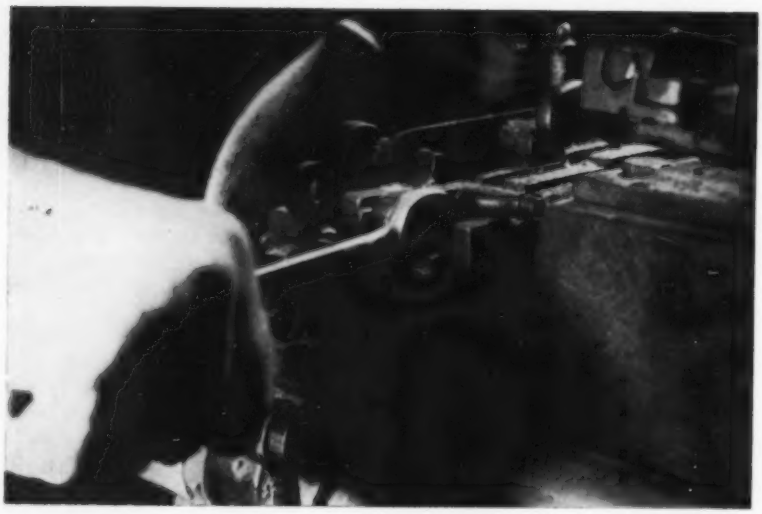
Presently finding an expanding market as a replacement for convertible auto tops, extrusion coated fabrics produced by Haartz Auto Fabrics Co., also are being used for auto upholstery, truck seat covers, door liners, head liners, and as boat covers and upholstering for chairs.

GAUGES in Draper loom maintenance

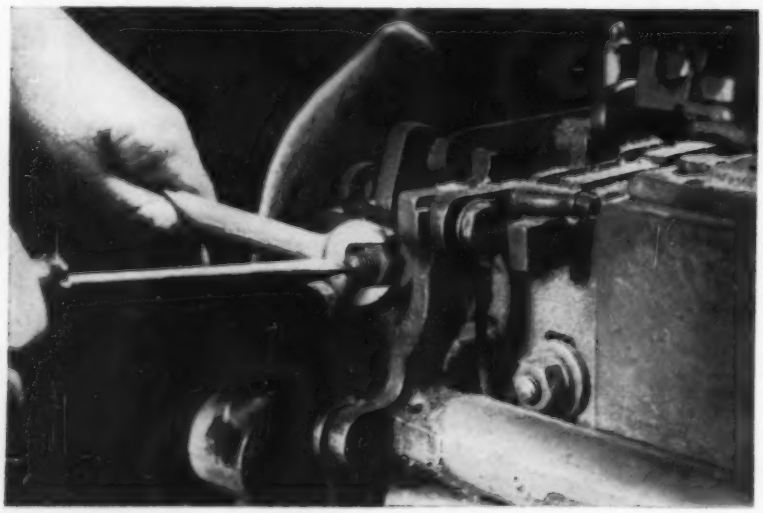
Why loom gauges are needed in the mill and how to use them

Drift the cam follower hub to level the filling motion hook in the fork slide.





Fortunately the filling motion parts are adjustable and it is easy to keep lost motion out of the assembly. Above, the wrench is on the starting rod arm stud, an adjustment that keeps vibration out of the filling feeler slide and prevents false transfers from that source. Below, the filling cam follower trip is being set to the lifting lever. Often it is possible to fit such parts to old looms not originally equipped with them.



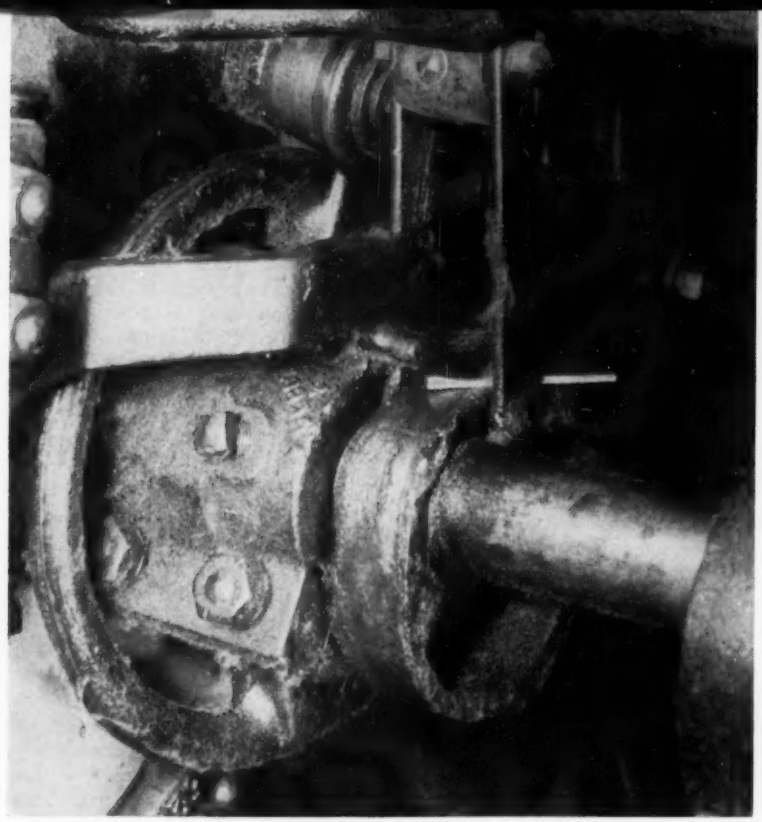
Article* 11*—*Keeping the transfer motion working correctly

Staff prepared Exclusive

THE FILLING motion cam initiates all filling motion action, and in the high-speed X-series looms it requires precise setting. Setting procedure also differs from that of the E-model loom.

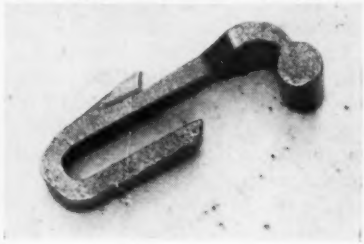
The E-model fixer pulls his loom to front center and adjusts the filling motion cam to begin rising at that point. To allow adequate clearance between the filling motion hook and the filling fork, he allows approximately 1/8" clearance between the hook and the fork. But the flimsy pivots which held the bronze filling motion hook to the filling cam follower dog often allow so much play the clearance may be ¼" or nothing. Furthermore that model loom is often allowed to wear the filling cam follower hub so much the filling cam follower will not stay on

*The first article of this series appeared in the January, 1960, issue. Parts 2, 3, 4, 5, 6, 7, 8, 9, and 10 appeared in the February, March, May, June, July, September, October, November and December issues respectively. Once the series is completed, it will appear in book form.



LEFT. Place the thick portion of the filling cam follower gauge between the low point of the filling motion cam and the cam follower. With the lay at front center, adjust the cam follower (end) up or down so the hook barely clears the filling fork hook. This method differs from the 1/8" clearance formerly given the E-Model filling fork and filling motion hook, the old-timer's "snakehead".

BELOW. This type of filling motion hook, and its filling cam follower dog, stays tight longer than the older pin types.



top of the cam. Needless to say, such looseness allows the filling cam follower dog to flop about inside the filling fork slide.

The combination of loose joints in the hub and the filling motion hook pivots often forces the fixer to feel his way through that setting, there being no constant reference point. Usually, when wear progresses so that the full throw of the filling cam produces inadequate movement of the filling motion hook, the fixer does something about those loose joints.

The linkage is something like slack in a freight train. Conceivably a locomotive moves freely back and forth over a considerable distance without even shaking the caboose.

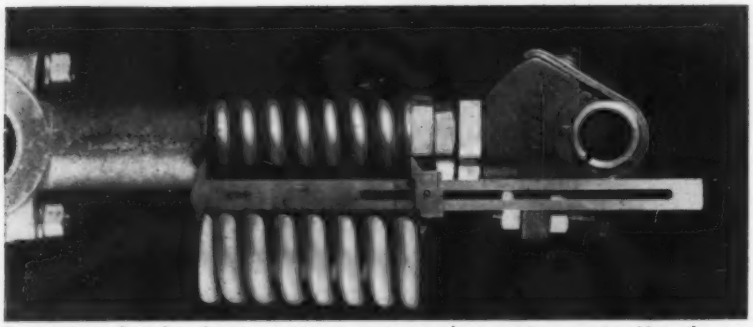
The higher-speed, higher-power X-series forces the fixer to use more care in timing this motion and in keeping the play out of it so the timing can be done at the cam and cam follower location. Furthermore, there are bushing and lubrication refinements in the X-model filling cam follower hub that permit it to remain in use for longer periods than the E-model offers. Also, the filling motion hook can now be assembled to the filling cam follower dog to produce a pivot that will run only a little less than forever without picking up too much play.

The X-series brought with it the filling cam follower gauge that is placed on the low point of the filling cam, between the filling cam follower and the cam, to act as a timing point for the filling motion hook. Thus with the shuttle preparing for its pick from the left-hand box, and the loom on front center, the filling motion hook is at its extreme outward position (toward the back of the loom). The filling fork is adjusted to the hook at that point by rotating the filling cam in the direction it operates until it just begins to lift the cam follower.

With the filling cam thus set, the loom is timed to pick up the filling fork if the filling is absent, and the entire piece of timing depends on tight linkages in the filling cam follower hub and at the pivot point between the filling cam follower dog and the filling motion hook. But getting the assembly into correct position for this is a longer story.

The broad, thin portion of the filling cam follower gauge provides the correct spacing between the filling fork and the filling fork grate, depth-wise, that is. Accomplish this setting by locking the lay on front center, loosening the filling motion stand, and sliding the assembly forward until the forks pass through the grate far enough to allow the thin portion of the filling cam follower gauge to be inserted between the back of the grate and the filling fork. Then, back away on the filling motion stand until the fork and grate embrace the gauge snugly, and drift the filling motion stand sideways until the forks center the slots in the grate. All else being equal, the filling motion stand will then be at right angles to the lay, as it must be.

Usually then it is safe to tighten



Sometimes neglected is the important compression crank arm springs require. Note the way the compression is read as a fraction of the length of the uncompressed spring. This gauge should be used only as recommended by Draper, as requirements vary considerably.

the filling motion stand in place and go about adjusting the filling cam follower dog and filling motion hook.

The loom fixer still must position the height of the filling cam follower dog by loosening the filling cam follower hub and drifting the assembly up or down until the filling motion hook slides in a level path back and forth on its support. If the dog is allowed to ride too high or too low, its rocking motion imparts a rise and fall to the hook which could spoil the setting.

Once that position is determined, tighten the filling cam follower hub into place. Loosen the filling cam follower end just enough to allow the follower to be adjusted up and down without giving undue slack in the hub. Then slide the thick portion of the filling cam follower gauge between the low point of the cam and the cam follower. Now adjust the filling cam follower hub to the filling cam follower end until the filling motion hook and filling fork barely clear each other. Tighten the filling cam follower end to the hub and check the setting once more.

Some prefer to set the V-type cam by moving the lay to front center, with the shuttle in the lever end, and adjusting the fork to clear the filling motion hook (snakehead) approximately ⅛ inch.

Others set this cam with the filling cam follower gauge, moving the thick portion of the gauge up the sloping side of the cam until it "bottoms" in the V of the cam follower. Either is sufficient, as there are no significant differences between the two methods.

The idea is to keep the slack out of this filling cam follower hub and all its attachments so that the slightest movement initiated by the filling cam is translated to the filling motion hook. Usually there is too much play present if the filling motion hook can be snapped forward (toward the back of the loom) and back on its pivot. Similarly, any wear in the filling cam follower hub or bushing that allows the filling cam motion to be lost in part must be corrected. If there is any likelihood that a part will not last until the next maintenance cycle, replace it with one that will.

Fortunately, the filling motion contains mostly adjustable parts. Chief among these are the filling motion finger and the starting rod arm, both of which must be kept adjusted snugly against the parts that give them their motion. Otherwise the filling cam will end up having its motions lost in mere ripples somewhere up the line.

Draper instruction sheets #513 and #540 adequately describe the filling motion trip setting, and since the setting does not involve the use of a specific Draper gauge, we are giving it mere mention here. Usually that part of the midget feeler setting that gives most trouble is the lifting lever which may wear so badly at its pivot that it can never be found anywhere near its proper setting point. It's an inexpensive part that should be replaced before it's worn so badly that it is unable to "rise to the occasion."

Overdrying changes cotton fiber shape

(from page 25)

We have found that the new convolution forms in only those areas of the fiber which are under stress. These areas of high stress have now been shown to be fibril reversals and show up as black or dark bands around the fiber when viewed under polarized light.

Determination of the number of reversals converted to convolutions might prove to be a means of determining when cotton has been overdried.

Moisture. Our work on location of moisture in the fiber has evolved a method of water extraction which does not affect chemically bonded water. The amount of water that can be extracted from the fiber decreases significantly if the fiber has been dried above 212-257 F. The standard regain value (ovendried) also shows a slight decrease in this range.

The difference between these two values for a given cotton sample might also be a means of determining if the fiber has been overdried.

Overdrying and Short Fibers Related. Our studies have confirmed previous findings that overdrying increases number of short fibers. We first ginned the cotton by hand and then dried the fiber, as opposed to drying and then ginning. We found that a slight permanent loss in length occurs on drying at temperatures above 212 F. We then submitted the fiber to mechanical working (five passes through the cotton blender) and redetermined the lengths. Samples that had been dried at temperatures above 212 F showed additional loss in length (up to 15 per cent at temperatures in the range of 298 F. Surprisingly, this loss in length occurs no matter if the fiber is "worked" in the dry state or in the equilibrated state 7 per cent moisture). Thus, the initial over-drying has instilled into the fiber a weakness which shows up as fiber breakage when the fiber is subjected to mechanical working.

MODERN TEXTILE MANAGEMENT

by Norbert Lloyd Enrick*

Exclusive

Article 7—Market survey aids in management planning

THE Market Survey Procedures described here are based on a program developed for a textile organization who desired a quantitative guide in the evaluation of expected sales for a wide range of styles and patterns at the outset of each selling season.

Demand during the peak months of the season exceeded capacity, so that it was impossible to produce only after orders had been received. Consequently, manufacturing commitments in terms of raw stock purchases, spinning and dyeing of yarn, print roll engraving, and finished goods inventory build-up, had to be made early in the season.

Program. The Market Survey Program was aimed at distinguishing early in the season between patterns that would be likely to "catch on" and others that might not find favor and, if produced for stock, would thus end up as "distress-goods" sold at a loss. Two major program phases were developed:

1. Pre-season surveys of pattern preferences, based on an evaluation of *preference ratings* by various individuals.

2. Early season purchases of sample yardages by customers, indicative of the actual trends developing, and expressed in terms of *trend ratings.*

The Preference Rating Points from Phase 1 were then combined with the Trend Rating Points from Phase 2, to obtain an Over-all Rating for each pattern.

Fills a Gap

In evaluating a system of market surveys for management planning, as proposed by the author, a high executive of an important mill group commented:

"This is something . . . we can try to advantage, as it aims to provide the decision for initial production, filling the gap in our best present methods."

Most fabric mills, as well as knitters, supplying a variety of styles to the trade, may find the methods proposed here of great interest. The procedures are well known in many industries, and deserve equal attention by the textile industry, as a tool for improving over-ali operations on a planned basis.

Pre-Season Survey. Using swatches of the various experimental patterns developed prior to the start of the season, various persons were interviewed and asked to indicate their preferences. The standard question asked was: "How do you like this design for ..... goods?", where the blank line would be filled in with "dress goods," "mens' sportswear," or other item, as might be appropriate.

Employees, customers' buyers and store personnel dealing directly with the buying public were included in the survey. Each person's response was based on a preference rating list, which in turn was keyed to rating points, as illustrated below:

Preference Designation	Preference Rating Points
Superior	100
Very Good	90
Good	80
Fair	70
Adequate	60
Just Passable	50
Questionable	40
Inferior	30
Unacceptable	20

Table I shows how the Preference Points may be evaluated for a particular style, thus providing a preliminary indication of the degree of popularity to be expected. The information provided will be of value in management's initial production and sales planning, but allowing for revisions and adjustments as the season gets under way and actual trends develop.

*Associate Professor, University of Virginia Graduate School of Business Administration

TABLE 1. Preseason Preference Survey

Example of Preference Rating Points for One Style

Grader	Patterns in Style A	B	C	D	E	F
Poole	70	50	70	50	40	80
Parks	90	50	80	50	50	80
Prinz	80	60	80	30	40	70
Pratt	70	50	70	70	30	90
Plain	60	60	90	60	20	80
Pruit	70	70	90	40	60	80
Pangs	60	30	80	50	30	70
Pruen	70	50	80	50	50	90
Average	**71**	**53**	**80**	**50**	**40**	**80**

Patterns C and F have received an average of 80 points each, representing a preference rating of "Good." Pattern A with 71 points represents "Fair" rating. All other patterns, having received relatively low points, are not likely to be successful sellers.

TABLE 2. Early Season Sampling

Trend Rating Based on Purchases of Sampling Yardages by Customers

Customer	Sales Ratio[2]	Patterns[1] A	B	C	D	E	F
Jones	4.0	(8) 32		(10) 40			(6) 24
Allen	20.0	(9) 180		(20) 400			(10) 200
Green	2.0		(4) 8		(2) 4	(4) 8	
Smith	10.0	(7) 70	(5) 50	(8) 80	(5) 50	(4) 40	(8) 80
Worth	8.0	(6) 48		(5) 40			(5) 40
Cairn	6.0			(10) 60	(4) 24		(5) 30
Coles	12.0	(4) 48	(4) 48	(8) 96			(8) 96
Davis	4.0	(4) 16	(5) 20	(10) 40	(4) 16	(4) 16	(5) 20
Sales Expected (100's of yards)		394	126	750	94	64	490
Trend Points		70	55	100	40	25	85

[1]*Under each pattern, parentheses show sample yards purchased. Regular figures show expected yards to be sold in 100's obtained by multiplying Sales Ratio times Sample Yards.*

[2]*From past experience, Ratio equals Yards Sold (in 100's) divided by Yards Sampled.*

TABLE 3. Over-All Pattern Rating

Example Showing Method in Which Preference Rating and Trend Rating Points are Combined for the Over-All Evaluation of Each Pattern

Determination of Over-All Pattern Rating Points	Patterns A	B	C	D	E	F
1. Preference Points (From Table 1)	71	53	80	50	40	80
2. Weight, Per Cent[1]	40	40	40	40	40	40
3. Weighted Preference Points (1) x (2)	28	21	32	20	16	32
4. Trend Points (from Table 2)	70	55	100	40	25	85
5. Weight, Per Cent[1]	60	60	60	60	60	60
6. Weighted Trend Points (4) x (5)	42	33	60	24	15	51
7. Over-All Rating (3) + (6)	70	54	92	44	31	83

[1]*Weighting in Lines 2 and 5 must total 100 per cent for each pattern*

Patterns C and F still received the highest number of rating points, and thus appear most desirable to produce. Pattern A has an "adequate" number of points. It might be planned for in moderate quantities. All other patterns have received relatively low points and are not likely to be successful sellers.

Early Season Sample Sales. Very early in the season, the trend of sales of sample yardages to customers serves as an indication of the market that may be developing for each pattern. A typical evaluation is illustrated in *Table II*. For each pattern, the sample yardages purchased by a customer are shown in parentheses.

After the customer has had a chance to cut and sew his own styles and show them to his trade, he may be expected to order regular yardage quantities. An indicator of the yardage he may thus order is given by the customer's sales ratio.

Assume, for example, that customer Jones has in the past purchased 400 yards for every one yard sampled, then his Sales Ratio, in terms of 100's of yards, would be 400/(1 x 100) which works out to a Ratio of 4. Next, by multiplying the sample yardages by the Sales Ratio, the expected yardage sales are developed.

Each individual yardage sales estimate is highly tentative and may be considerably off on either the high or low side. However, when totaling the individual estimates of all customers on a particular pattern, it is inevitable that some of the excessively high figures will be balanced by unduly low figures. As a result the over-all pattern estimate should be a useful indicator of the market trends developing for each such pattern.

In the example in *Table II*, Pattern C has the highest expected yardage of 75,000 and therefore receives the highest rating of 100 Trend Points.

The next highest Pattern, F, receives 15 points less, or 85 Trend Points. Proceeding similarly for all Patterns, Trend Points are assigned.

The interval of 15 points was chosen to provide a suitable range of points for all patterns. If there had been more patterns, such as 12 in place of the present six, only 7 or 8 points in place of 15 points would have been used for the decrease in points from one pattern to the next.

Over-all Pattern Rating. We are now ready for the Over-all Pattern Rating, as illustrated in *Table III*. The Preference Points and Trend Points are entered and then combined by weighting them 40 and 60 per cent respectively.

The weighting is generally chosen in advance, on the basis of management judgment, giving a higher weight (60 per cent in this illustration) to the more important

(Continued on page 134)

by J. B. Goldberg
Consultant to the Textile and Allied Industries

Exclusive

WHAT PRICE POLYPROP?

THE MANY attributes which have resulted in such widespread interest in polypropylene fiber include high strength, extremely good resistance to abrasion, high modulus, good resilience, low moisture absorption, resistance to mildew, acids and alkalis, and a very low specific gravity (0.91). The very light weight of this newest synthetic fiber is probably one of its most attractive properties.

In addition to making possible the production of strong, durable fabrics with a minimum of weight, from the economics point of view, a fiber which provides about 20% more cover than equivalent weights of the nylons, polyesters or acrylics, while possessing many of their desirable characteristics, sounds like the answer to those who stress the need for a low cost synthetic.

What About Cost? So much has been said about the potentially low cost of polypropylene fiber, with little basic information presented to substantiate some of the wild predictions, that it is important to analyze the situation objectively and to consider a few cold statistics along with other pertinent data. We are reminded of the early days of nylon when the public was told that this first true synthetic glamour fiber was made from coal, air, and water.

While the consumer is well aware that air is absolutely free and water is extremely cheap, he would probably have to inquire about the cost of coal. His logical conclusion would be that this is the most expensive ingredient, priced at less than 0.5¢ per pound. Nevertheless, even the layman realizes that nylon fiber is not made by stirring a mixture of air, water, and coal in a bucket, and there are few crystal ball gazers who predict that nylon staple will some day be available for as little os 50¢ per pound.

It is generally agreed that a low-cost synthetic fiber with good performance characteristics has an opportunity to capture a large share of today's market in industrial applications, apparel, home furnishings, and many automotive fabrics. On the other hand, excepting industrial fabrics, what may be a low-cost fiber as delivered to the spinner or weaver can become a relatively high-cost raw material—if one is obliged to face dyeing and finishing costs which are substantially above those for the wet processing of fabrics of competitive fibers.

Raw Materials. As a basis for estimating what selling price one might expect for polypropylene fiber in the foreseeable future, let us start with the cost of raw materials, utilizing data and actual experience with related products and processes. At this point, comparison can be made with polyethylene, a resin which lends itself to the manufacture of monofilament yarn endowed with such favorable characteristics as high strength, low specific gravity, good toughness and relative inertness to many chemicals.

Polyethylene has been on the market for over 20 years, and limited production of monofilament yarn was started in this country in 1946. The monomer cost is currently about 5¢ per pound. Conversion to polymer form, with attendant marketing depreciation and other costs, to make it usable as a plastic or for the production of film or monofilaments is approximately 25¢ per pound, resulting in a selling price of about 30¢ per pound.

As an indication of the fact that this is not highly profitable to most producers, one large manufacturer tried to obtain an increase of 2½¢ per pound for molding or film grade of polyethylene only a few months ago. This was not an inexperienced marginal operator, but a highly respected and knowledgeable manufacturer with an enviable record of sound management and successful achievements in the chemical business.

Despite the fact that it was announced that such a price rise was needed to maintain a nominal profit margin on investment and cost, the company was unable to maintain this slight increase in the face of strong competition.

In making comparison with polyethylene it should also be borne in mind that the output of polyethylene resin reached 1.2 billion pounds in 1960 and may go to as high as 1.5 billion pounds by the end of this year, whereas polypropylene production is now less than 5% of this total. While polypropylene production is expected to reach 200 million pounds by the end of next year, indicating a more rapid growth *rate*, the overall output will still be only a small fraction of that of polyethylene.

The present price of fiber grade polypropylene resin is about 44¢ per pound. Taking into consideration the fact that the manufacturing operations are regarded as being closely similar to those of polyethylene, it is difficult to justify any prediction that polypropylene

resin, with a much lower total output, can approach 30¢ in the near future.

Obviously, the 5¢ cost of the monomer leaves little room for any significant reduction, and research scientists agree that it will be a miracle if some breakthrough in technology, such as the development of a much more efficient catalyst, will soon lead to any radical lowering of manufacturing cost of the polymer.

Since some of the original research was carried out in Europe, and because of the generally lower labor cost in many foreign countries, one might suppose that a lower-cost polypropylene resin will be imported for spinning in the United States. Apart from the fact that labor represents a small part of the cost involved in the production of polypropylene, perhaps the best answer to this suggestion is that the Montecatini (Italian) interests are behind the Novamont Company now entering commercial production at a 25 million pound plant in West Virginia.

It is interesting to note that Farbwerke-Hoechst is selling general purpose polymer in Germany at about 48¢ per pound as compared with the domestic price of 42¢ for this grade. As a matter of fact, it is known that some quantity of the resin is being exported from the United States in competition with European products.

Extrusion and Fiber Production. In calculating the cost of producing a synthetic fiber, the next step to be considered is the process of extrusion and formation of finished fiber. Since we are primarily concerned with staple, we shall overlook monofilament and multifilament yarns. The most direct cost comparison can be made with the nylon process. If anything, it is believed that the chemical spinning of polypropylene textile fibers may be more complicated and more expensive.

Yet it is estimated that this cost for nylon is about 25¢ per pound, much depending, of course, on the total volume and denier per filament range. For example, a 2-3 denier staple will probably cost up to 5¢ per pound more than a 12-15 denier staple. Certainly the production of any denier per filament size below 3 will require a premium.

Need for Improvements. As mentioned at the outset, if polypropylene is to become commercially successful on any large-scale basis, it must be readily dyeable. This will entail continued costly research to chemically modify the product or the development of new dyestuffs and application techniques. Actually, one domestic producer is now offering what is described as a dyeable type fiber, still limited in its versatility, at a 10¢ premium.

Thermal sensitivity is another problem which will have to be lived with, requiring considerable expenditure for a consumer educational program to move large volumes into apparel fabrics. The years of experience with the limitations imposed on the use of Dynel in woven apparel fabrics are not to be disregarded. As is the case with all other true synthetics, a certain amount of a hydrophilic fiber is required in blends to contribute comfort in apparel fabrics which come into contact with the skin.

Capital, Research, Promotion. In considering plant costs, it should be noted that polyethylene plants were built with 1950 dollars and not with the 1960-61 dollars used for modern polypropylene facilities.

Apart from the sizable capital investment, estimated to be from 20-30¢ per pound of annual capacity, the tremendous sums already spent in developing the polypropylene process must be written off. For example, it has been reported that the Humble Oil Refining Company and its research partner, Esso Research, as of last year made a combined investment of close to $30 million in entering the polypropylene industry.

As a further complication, the patent situation is far from clear, and it is conceivable that some companies will sooner or later find themselves involved in litigation which can be quite costly and will have to be taken into account eventually, whether the money is spent in the prosecution or defense of patents or ultimate payment of royalties.

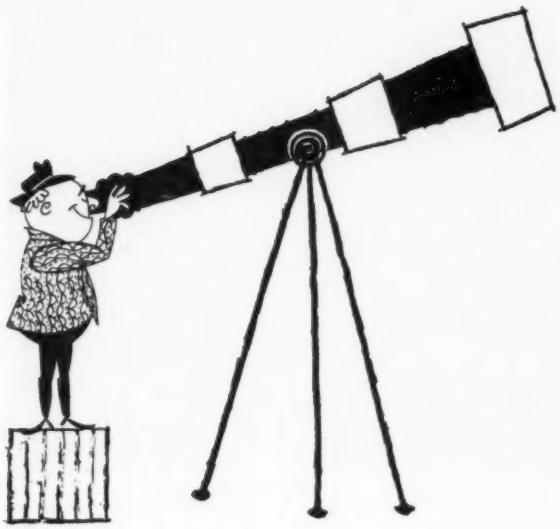
If any new textile fiber is to find a ready market in the consumer field, in home furnishings or apparel, the producer must be prepared to spend millions of dollars in advertising, promotion, and consumer education. This cost must be included as part of marketing expense, likely to amount to several cents per pound for a period of many years.

In the past, some synthetic fiber manufacturers have appropriated much more than a few cents for each pound of fiber sold. Last year one producer of polyester staple reduced prices by as much as 36¢ a pound with the assertion that costly promotional expenditures were "senseless." Up to the present time, most other producers of synthetics have not indicated that they agree with this policy.

With serious competition by the presently established synthetics—the nylons, polyesters and acrylics, the problem will undoubtedly become more acute as time goes on. Even the popular natural fibers, cotton and wool, are receiving added support in research, advertising and promotion as the desperate struggle to retain old markets or develop new ones becomes more intense.

The high cost of technical control of quality, continued research to make product and process improvements and to provide technical service to fiber spinners, weavers, dyers and finishers, is well-appreciated by all producers of man-made fibers. All of these expenditures will eventually find their way into the final selling price of textile fiber, and the manufacturer certainly must allow for at least a small margin of profit if he is to stay in business.

In summary, it is evident that polypropylene fiber is an exciting development and will undoubtedly find its place in the ever-increasing world of synthetics in the textile industry. But those who speak recklessly of a good polypropylene staple becoming available on the domestic market at a price as low as 50¢ per pound in the near future are misinformed, daydreaming, or are in need of a lesson in simple arithmetic.



What you can expect in

Carding-Spinning machinery in the next decade

by Gordon C. Anderson
Chief Development Engineer
Saco-Lowell Shops

Exclusive

"We believe that the ultimate process for making yarn will require only three manual operations . . . but whether the economics can be solved in the next decade is highly debatable"

WHAT CAN America's textile industry anticipate in mechanical design of card and spinning room machinery in the next decade?

I am an engineer rather than a prophet, yet I feel no hesitancy in making this prediction: Everyone in textiles will be struggling in the next decade toward the same objectives which have been pursued in the last century — *improved quality and lower costs.*

As machinery builders, what can we contribute to help our customers realize these goals?

IMPROVED QUALITY

With reference to improved quality, I cannot help but feel that with the instrumentation and experimental techniques now available, our continued study of fiber characteristics and handling problems will point the way to further improvements in processing and ever more ideal geometry in our fiber-handling devices. This, coupled with our growing skill in producing more precise machinery, promises continued improvement in yarn quality.

Our progress in the direction of improved quality to a large degree is set by our ability to measure. Now such instruments as electronic evenness testers are in daily use, and with better tools for measuring have come investigations into all sorts of things such as the effect of roll concentricity on uniformity. More recently, the Spectrogram has come into being, and now we can not only measure the magnitude of cyclical variations, but also determine their frequency. This provides means by which we can single out the specific elements in a machine causing a particular deviation.

When the magnitude of a deficiency can be measured and its course conclusively demonstrated, more adequate and more accurate machinery is sure to follow.

Electronics. Electronics may be destined to play an important role in the card and spinning rooms. Measurement is the first step in any control process, and we now have electronic means of instantaneously measuring yarn and sliver variations. Prototypes of our ADC (automatic draft control) draw frame [TI for Nov., 1959, page 88] which have been shown at Atlantic City and Milan, have demonstrated that a variable draft mechanism can be automatically controlled by a capacitance type measuring head through electronic means and correct short term variations in sliver at speeds up to 400 ft/min. Thus, I believe through improved geometry, increased precision, and new control concepts, *steady progress towards better quality is probable.*

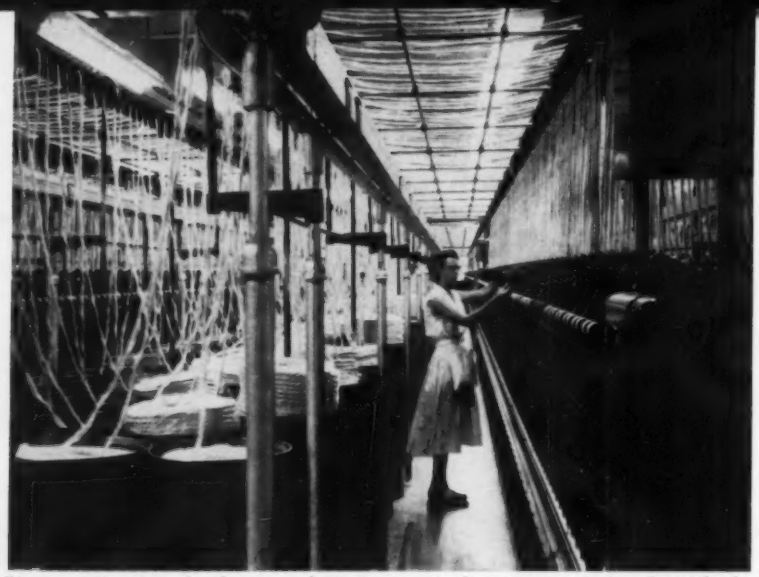
LOWER COST

There are three general areas in which machinery manufacturers can work to lower the cost of yarn.

First, we can try to design into our equipment every concept that will increase the number of pounds per hour per operator. Among these we might list eliminating or combining processes, increasing package size, increasing speed, automating, and incorporating features that make a machine convenient to operate.

Secondly, we can strive to build equipment that requires minimum maintenance from the standpoint

"I believe that the Rovematic frame is indicative of things to come," says Saco-Lowell's chief development engineer, Gordon Anderson, author of this article.



"An interesting example of process elimination . . . is sliver-to-yarn spinning. Certainly the next decade will see some success [for fine yarns] in this direction." Spinning of coarse cotton yarns from sliver has been done successfully for several years. This photo of sliver-to-yarn spinning (2s to 8s) at Rockford (Tenn.) Mfg. Co. appeared in TI for August, 1958.

of mechanical and electrical failures, lubrication, and cleaning.

Thirdly, we can make every effort to keep our customers' investment at a minimum by paying close attention to such things as the cost of our machinery, the cost of installation or erection, and the amount of floor space required.

Process Elimination. Everyone is watching the current efforts to eliminate or combine operations. One such present effort is to combine five to ten cards in a single unit, incorporate a draw box and thus eliminate one process of drawing. At Saco-Lowell, rather than building a completely new machine, we believe it is wiser—at least until the economics of the idea are thoroughly understood—to reclothe and reshaft old cards now in place, couple them together, add a proper drive, a draw box, and a coiler, and thus arrive at a multiple card unit at minimum investment to the mill.

An interesting example of process elimination is the current experiment in sliver-to-yarn spinning. Certainly the next decade will see some success in this direction. The question here is probably not so much whether sliver-to-yarn spinning will ever be economically practical—but when? I am sure if we at Saco-Lowell thought that roving frames were going to disappear from the face of the earth in the next few years, we would not have undertaken the most extensive tooling program in our history to put our new Rovematic roving frame on the market [TI for May, 1961, p. 171].

Package Size. The recent past has seen quite phenomenal increases in package size at almost every operation in making yarn. The trend will no doubt continue but probably at a slower rate. We are approaching the point of diminishing returns in some areas, and invention rather than simple redesign of known equipment may be required to realize further substantial gains.

Picker laps are now up to 70 lb. Further increases will probably depend on the development of better handling systems.

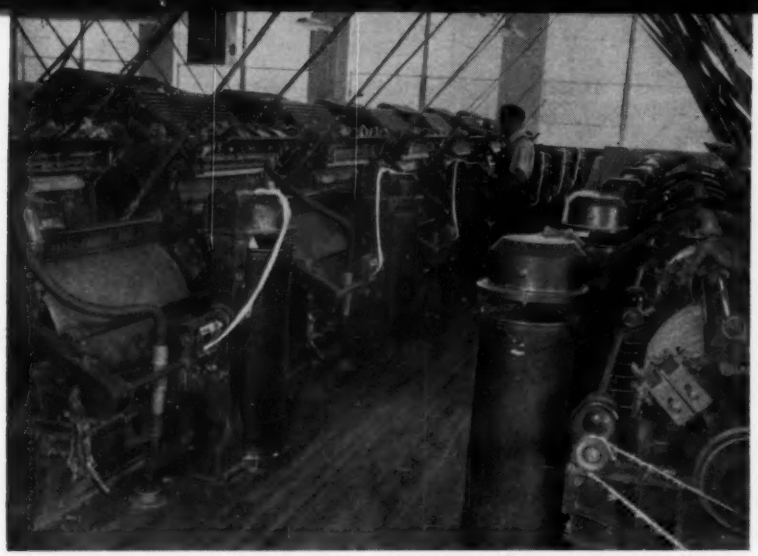
18″ x 42″ sliver cans are now quite common, and 24″ x 48″ cans are starting to appear. No particular difficulties are anticipated in designing coilers for still larger cans, but here again transportation or handling problems must first be satisfactorily solved.

The newest roving frames are building 14″ x 7″ packages. It appears that 7″ diameter is about as large a package as we can build with any presently known type of flyer without sacrificing density and speed. If larger diameters do become possible, they will present real space problems in spinning frame creels.

Great strides have been made in package size on spinning frames in the last decade, and it is reasonable to expect that some progress will continue; but the problem has its complexities. If the ceiling on traveler speeds could be lifted, it would help; and a great continuous effort is being made in this direction. However, there are also balloon control problems, windage, snow-storming, and endless other considerations, including power consumption, which in many instances increases faster than the square of the speed.

Machine Speed. Nothing commands attention of mill men more than speed, providing it entails no serious detrimental effects.

The most dramatic speed increases in recent years have undoubtedly been in the drawing frame. At the beginning of the last decade 150 ft/min was considered fast. I am sure that as new draw frames are designed, they will be built to mechanically handle speeds in excess of 1000 ft/min in anticipation of the day when all the fiber problems that will surely develop at these speeds may be



Until the economics of the idea of combining five to ten cards in a single unit to eliminate one process of drawing are thoroughly understood, the author says, "we believe it wiser to reclothe and reshaft old cards now in place, couple them together, add a proper drive, a draw box, and a coiler, and thus arrive at a multiple card unit at minimum investment."

Other S-L Plans

■ SACO-LOWELL has some irons in the fire that weren't described here: After this article was written, it was reported in the press that the firm had under development a compact spinning frame, a sliver-to-yarn spinning frame and a spinning frame doffer.

This was revealed by Arnold H. Maremont, president of Maremont Corp., parent firm of Saco-Lowell Shops. He didn't say when the machines would be commercially available—*The Editors.*

successfully solved.

Current flyer speed on conventional 12″ x 7″ roving frames is about 750 rpm. Our Rovematic frame will carry 14″ x 7″ packages at 1200 rpm of the flyer. In the years to come, we may be able to squeeze a few more rpm's out of this roving frame. However, I suspect that we are on the threshold of fiber problems due to the effect of windage on the surface of the package; and these, rather than the mechanical difficulties of the past, will be our stumbling block.

Not too many years ago, traveler speeds on spinning frames of a mile a minute were considered about the practical limit. On occasions, we now attain 8000 ft/min (on 3″ rings). Like everyone else who is familiar with the cost of this progress in money, sweat, and frustration, I am reluctant to prophesy what 1970 will bring, but 10,000 ft/min is probably a reasonable guess. I am certain that a substantial slice of every spinning frame manufacturer's research budget will be alloted to the problem of raising spindle speeds; and, while the way is not clear at the moment, surely progress is not going to stop.

Automation. Perhaps some people feel that automation on textile machines isn't proceeding as fast as it should. One of the problems is that the speed of successive operations from raw fiber to yarn varies tremendously and this complicates automation. Secondly, the amount of labor required by these processes is already so small that its elimination can hardly pay for the quantity of new equipment not yet invented that would be necessary.

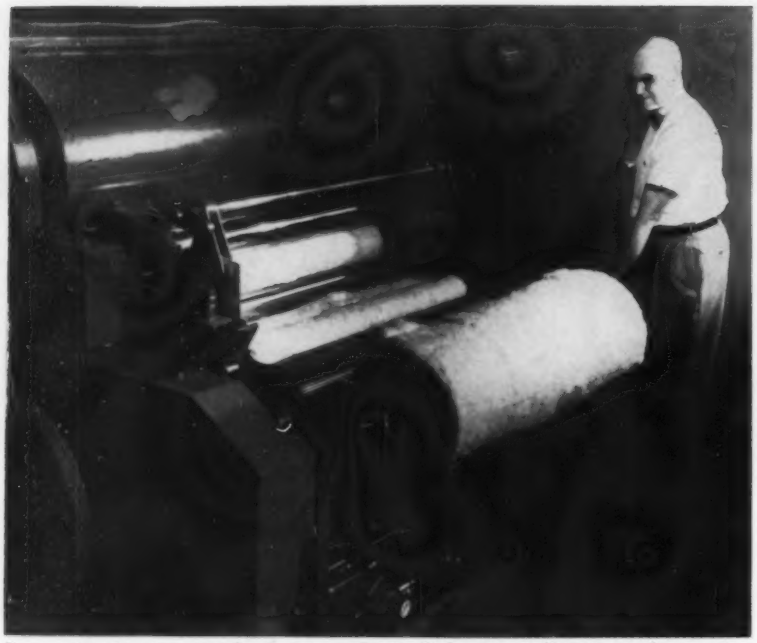
In other words, automation is no good unless it can be economically justified. Nonetheless, the automated mill is the dream of many progressive people; and without a doubt, as time goes by, every area where automation promises any practical return will be investigated extensively.

Maintenance. You will recall I pointed out that the second area in which the machinery manufacturer can contribute to lower yarn costs is to design machinery that requires less maintenance from the standpoint of electrical failures, lubrication, and cleaning.

In this respect, I believe that the Rovematic frame is indicative of things to come. All the working parts of the spindles in this machine are completely enclosed in tight cast aluminum cases and are running in oil. Gone is the familiar traversing carriage of the conventional roving frame with all its open air gearing, drive shafts, lifter segments, and counterweights. All the mechanism that used to be spread out for half the length of the frame and left to get along as best it could in the dirt and fly now has been consolidated in one oil-tight gear box in the head end where it is continually flooded with clean lubricant by a pump. All parts with any appreciable speed are carried in anti-friction bearings. Not only does this machine-tool type of construction assure long, trouble-free life and freedom from lubrication maintenance, but it results in an exceptionally easy-to-clean and clean-looking machine.

At Saco-Lowell, we believe this type of construction will, in the years to come, be incorporated in more and more of our equipment. Spinning frame twist gearing, lay gearing, and probably later, draft gearing, will undoubtedly be influenced by this concept. Certainly any further substantial increases in draw frame speed will make this type of construction almost mandatory.

As time goes on, I believe you will see more and more sealed-for-life anti-friction bearings used to support those parts which must necessarily be left in the open. Even now, it is well established that in many instances it is cheap-



". . . automation is no good unless it can be justified economically," Mr. Anderson points out. The purchase of automatic picker doffers, for instance, may be a difficult one to justify, since this would not eliminate the need for a picker attendant. Some time ago Saco-Lowell developed the automatic picker doffer shown here, but so far American textile manufacturers have shown little interest in it. On the other hand, a number of units have been sold to foreign mills. Are there advantages which domestic mill men are overlooking?

er to replace bearings after 20,000 or 30,000 hours than it is to maintain expensive lubrication schedules. More design emphasis will be placed on easy bearing replacement.

Dry bearings made from materials such as nylon, Delrin, and Teflon, cannot help but find increased application in locations where loads are light and speeds are low, especially in fiber handling zones where elimination of oil seepage can pay real dividends in reduced cleaning.

"Convenient to operate" and "easy to clean" will continue to be paramount goals of all designers. Top arm weighting systems for drafting elements and, more recently, the MagneDraft system of magnetically weighting top rolls are examples of these ideals which have aroused tremendous enthusiasm throughout the textile world.

As electrical equipment on our machines becomes unavoidably more complex, it is imperative that the quality of electrical installations be improved. The electrical installations on our Rovematic and on all proposed new designs will comply with the latest code for "Electrical Installations on Textile Machinery," published by the American Institute of Electrical Engineers. This, among others, specifies such things as NEMA type 12 enclosures which are gasketed and lint tight. This attitude towards better electrical installations is long overdue in our industry.

Cost of Equipment. The last area in which we, as machinery manufacturers, can work towards reducing cost of yarn, you will recall, includes all those considerations which affect our customers' investment, such as the cost of machinery, the cost of installation or erection, and the amount of floor space required.

It would be naive to think that we can look forward to any general reduction in the price of new machinery. As performance demands continue to grow, so will the complexities of machinery; and even though we commit ourselves to more and more extensive tooling programs, per unit prices continue to rise. I believe, however, that the cost of machinery for a given operation, considered on the basis of cost per pound of product, will remain constant or decrease; and, after all, that is the important consideration.

In order to effect savings at installation, the idea of shipping machinery pre-erected is gaining ground and is now being given consideration during the design stages of new equipment which should make it even more practical in the future.

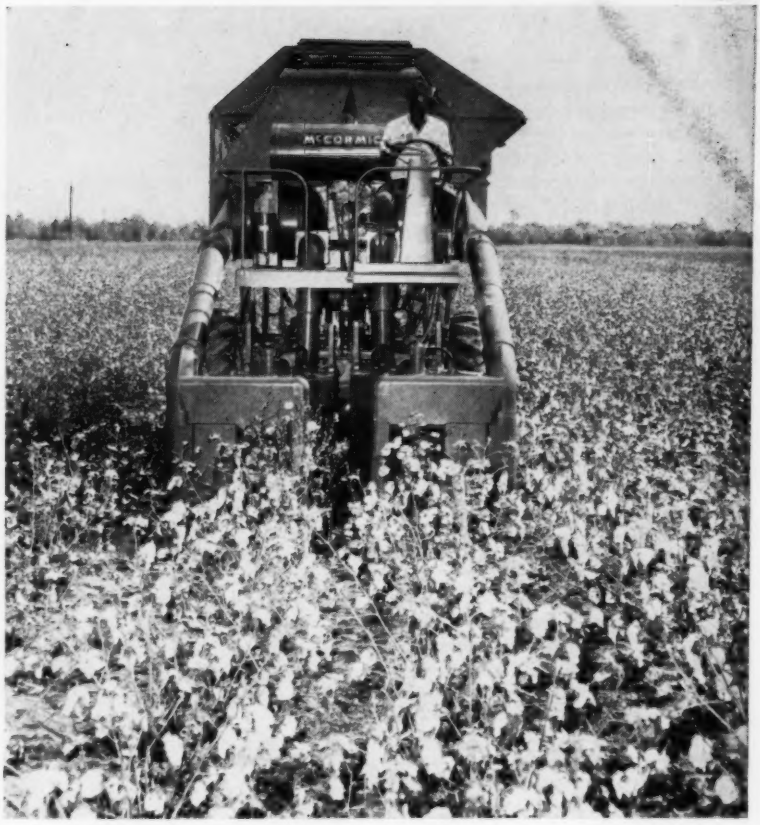
The trend to build motors into or under machines is saving some floor space. Obviously, the greatest saving in floor space, however, comes as a result of increased production rates.

Appearance. One last trend which I would like to mention concerning the design of textile machinery is the trend towards better appearance. Machinery users are quick to say that in production equipment appearance is immaterial and that price and performance are the things that count. While they say this in all good faith, machinery builders have come to the conclusion that mill men attach more importance to appearance than they realize. People associate good looks with good performance; also, good looking machinery is usually clean machinery. So, I believe the effort toward better appearance which we have noticed in the last few years will continue.

In Conclusion, and perhaps as a general summary of our opinion, let me say that in 1836 a man named Day patented an idea for making yarn from tow or raw fiber in a single operation. Ever since, countless men have wondered about such a possibility. It is still a "Day" dream but we are getting closer.

We believe the ultimate process for making yarn will require only three manual operations: that is, feeding fibers in bale form to a blending unit, transferring sliver from the drawing frame to the spinning frame creel, and doffing the spinning frame, possibly with some mechanical aid. This is theoretically possible today, but whether the economics can be solved in the next decade is highly debatable.

COTTON MILLS CAN GROW THEIR OWN



by Ben Colton*
Exclusive

SOME steel mills own iron ore mines, some oil companies own crude oil wells, so why not have mill-owned cotton fields and cotton gins to produce the cotton needed for mill operations? Why not conclude that cotton growing is a valid and important part of cotton textile manufacturing?

It appears that cotton can be produced for mill use, and to more closely approximate mill requirements without sales costs being added, at about 18¢ per pound processed through the gin. Add another 7¢ per pound for contingencies, making the total about 25¢ per pound, and the price would still offset unfair price differentials imposed by current marketing channels and regulations. Irrigated cotton may be grown for as little as 18¢ per pound, according to some authorities.

Of course, the premise is not without complications, initially, in view of the fact that land must be had and a farm management system established by the mill or mill group.

With the government practicing a two-price system and monoply control, cotton price must be brought into the right bailiwick somehow to help the United States manufacturers offset foreign wage and material cost differentials. Furthermore, cotton farmers under the present system do not raise cotton for the mills, making it difficult for the mills to get the cotton properties wanted in many instances.

If mills control their own farms and cotton crops they can produce what they want, have it harvested the way they want it, and gin it the way they want it. The farmer would remain employed, the government would collect more taxes, the tax payer would stop paying for the cotton subsidy, and the cotton mills could see a ghost of a chance in meeting the import situation.

A mill using 125,000 bales of cotton, weighing an average of 500 pounds per bale, would consume about 62,500,000 pounds of cotton per year. If the cost of producing the cotton under mill ownership were 25¢ per pound, as compared to 38¢ per pound under the present system, the saving would amount to 62,500,000 lb/yr at 13¢/lb, or a tidy sum of $8,125,000.00.

Of course such a change in cotton procurement by a mill would not be a simple move, and investment in farm lands and management would be substantial. For example, the cost of some California cotton land is quoted in an expensive bracket. Such land usually produces in the range of two bales per acre.

Delta land may be costly also, but with so much at stake it appears that a thorough investigation of all the possibilities would be worthwhile for many mills or mill groups, many of which consume as much as half a million bales a year.

The jobs involved in the change

*A name sometimes used by a southern mill man

Thin Ice?

We prefer to reserve judgment on Mr. Colton's article, for it departs a long way from what we consider the familiar, and some of the hurdles out there are simply too high for the moment. But we do point out that Mr. Colton could well be ahead of the rest of us—after all, the British firm of Fine Spinners and Doublers, Ltd., own Delta and Pine Land Co., one of America's biggest growers. And Anderson & Clayton Cotton Co. own a cotton mill in Houston, Tex.

There are solid difficulties facing the plant or firm that would grow its own cotton. On the other hand, there are some very knotty problems facing the firm or plant that tries to process some of today's cotton.

Far-fetched? So was the idea that today our textile industry would be paying taxes to buy cotton to be sold to foreign producers who could return their low-cost goods to our counters and alongside the very goods our badgered manufacturers have made from cottons Uncle Sam makes them pay higher prices for . . . if this be method there is madness in it.

Far-fetched? So was the thought of our major cotton users paying ginners a premium not to grind the staple—just gin it, please. Custom ginning, the National Cotton Council calls it.

Far-fetched? So was the picture of that same council sitting smugly by and yelling "Prove it" (they've had a change of heart, incidentally) when outraged spinners complained of poor running cottons—the condition doesn't show to Uncle Sam's cotton buyers who buy it in either form—ground or ginned.

Far-fetched? So was the idea that Uncle Sam would do what he has done to cotton. We'd like your reactions, so drop us a note if you care to get in the act.

—The Editors

of management would not be jobs lost but would exist under different management should some enterprising textile mill organization undertake such a project. Perhaps there are real reasons existing why such a plan could not be executed. The question is: Why not? There appears to be no law against it.

Of course a cotton allotment must accompany lands bought for cotton growing. But this is not necessarily a serious impediment, as many such allotments may be picked up easily from small farmers who are tired of fooling around with low yields.

Much of the soil producing low yields differs little from soils turning in high yields. Since the difference must then be one of technique, simply switching high-yield farmers for low-yield ones can make a whopping difference. Look into the Southeast for example.

South Carolina has its share of farmers who produce about ½ bale per acre (no ridicule intended, for the national average is less than 1 bale per acre), but South Carolina also boasts some enviable production. The last winners in that State's cotton growing competition turned out a couple of bales per acre at a cost of 17¼¢ per pound, a gross cost that includes 8 to 12 poisonings and a 6% land depreciation charge.

But even though land in the Southeast could produce far more cotton than it does, there is nothing to prevent a mill in the Southeast from growing its cotton in Arkansas or Texas or Mississippi or California. Indeed one could expect such, for while South Carolina's winners devoted special effort to producing two bales per acre, California *averaged* approximately that amount from each of its 1,000,000 acres planted to cotton in 1960.

First-quarter man-made fiber output up 6%

■ OUTPUT of acetate yarn, rayon, non-cellulosic and textile glass fibers (that is, all man-made fibers except acetate staple and tow) totaled 444,800,000 pounds in the first quarter this year, a 6 per cent increase over the preceding quarter, a compilation of man-made fiber production data by Textile Economics Bureau, Inc., reveals. Output in January-March comprised 50,600,000 pounds of acetate yarn, 187,600,000 pounds of rayon filament yarn and staple, 169,700,000 pounds of non-cellulosic fiber, and 36,900,000 pounds of textile glass fiber.

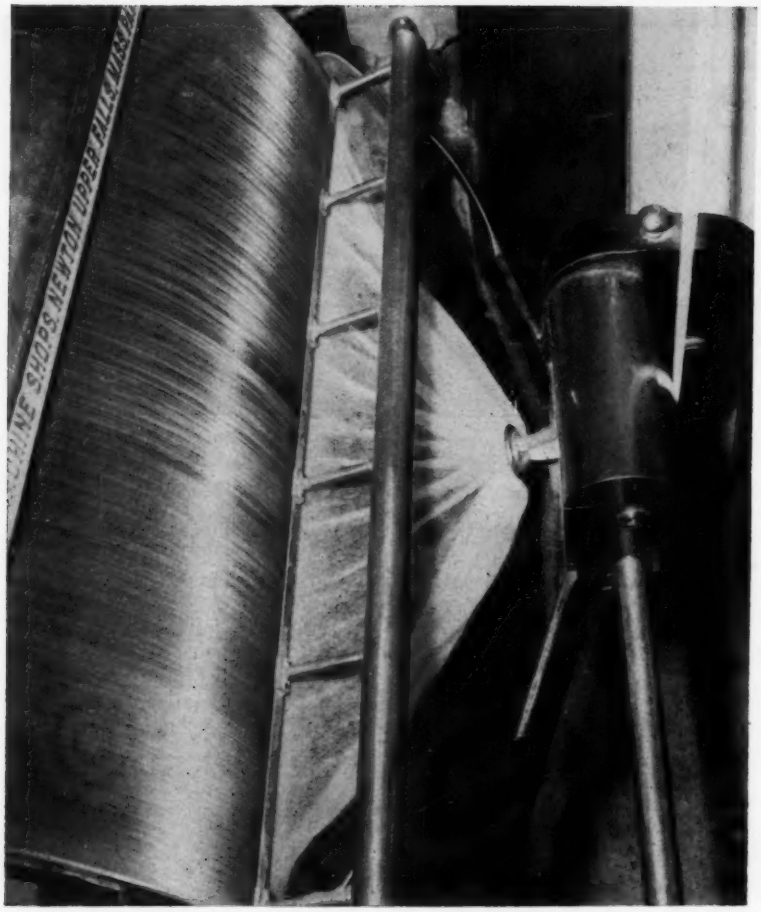
First quarter production of high tenacity rayon filament yarn totaled 64,100,000 pounds, a gain of 3 per cent over the preceding quarter but 20 per cent under first quarter of 1960. Output of regular and intermediate tenacity rayon filament yarn in the March quarter held to the 33,500,000 level of the preceding three months but was 19 per cent under the first quarter of 1960.

Acetate filament yarn output in the first quarter totaled 50,600,000 pounds, a figure equal to the previous quarter but 12 per cent under the March 1960 quarter.

Output of rayon staple and tow in the first quarter amounted to 90,000,000 pounds and showed an increase of 15½ per cent over the previous quarter.

Non-cellulosic fiber output amounting to 169,700,000 pounds as noted was up 7 per cent over the preceding quarter. It was made up of 112,200,000 pounds of filament yarn and monofilaments (up 3 per cent) and 57,500,000 pounds of staple and tow (up 17 per cent).

First quarter 1961 output of textile glass fiber amounted to 36,900,000 pounds and thus continued the quarter-to-quarter decline evident since the record output of 48,500,000 pounds in the March quarter of 1960.



METALLIC CLOTHING ROUND TABLE

Georgia mill men appraise metallic clothing performance, swap operational data on other carding problems

Staff report

THAT PORTION OF the Textile Operating Executives of Georgia meeting involving quality control appeared in the June issue, page 73; the talks on spinning, led by *James Wright*, appeared in the July issue, page 83. The opening, picking, and carding roundtable, led by *R. O. Simmons*, follows on these pages.

Metallic Card Clothing. See *Table 1* for a breakdown of plant experiences with metallic card clothing. Three topics that require a measure of discussion are omitted from that figure: changes in card waste; choke trouble; and maintenance handling.

Normally the presence of metallic clothing reduces the over-all quantity of card waste, but in the case of *Mill U*, which had been using continuous strippers, the clothing produced no change. Usually fly increases, and flat waste quality drops dramatically.

While *Mill P* reports no appreciable change in the amount of waste removed, *Mill A* reports: doffer and cylinder strips eliminated; flat strips reduced 65%; reworkable waste reduced 51%; and card fly unchanged.

In some instances chokes are not a problem; for the most part they are troublesome. Corrections range from stopping the card and removing the choke to using anti-choke whiskers and rubber fins on doffer and cylinder. But *Mill B*, which uses the whiskers and fins, states pointedly: "This helps considerably, but it does not eliminate them." *Mill E* corrected for that condition by resetting cards. *Mill S* controls them by setting front screens closer. *Mill U* reports that metallic screens help but are not the complete remedy. *Mill N* has found no solution. Several mills have adopted cleaning schedules of a frequency sufficient to prevent their formation.

While some plants use their own mechanics to effect repairs, most of the mills reporting call on the factory or supplier for such.

The question "What machine or method have you found best in removing cotton stalk or bark from machine-picked cotton?" drew nine replies. Two mills forthrightly named the Super-Jet cleaner as being most effective; one plant reports finding no machine that completely removes such from machine-picked cotton; another plant has made no change in equipment nor is experimenting with any equipment not now in use; and four others present their opening line layouts:

Mill D has a cleaning line consisting of five blending feeders, two No. 12 openers, three No. 11 condensers, three No. 6 air filters,

TABLE 1

Metallic Card Clothing Performance

Mill	Carding rate (lb/hr)	Grade and staple	Production rise (%)	Drop in nep count (%)	Stripping cycle (hr)	Cards per grinder	Setting and grinding cycles	Feed rolls bolted down?	Screen type	Remarks
A	14	SLM LM	none	40	240	81	480	no	conv	Grinders service 62 cards on conventional clothing.
B	8.91-12.30	SLM 1 1/16"	15	50	120	—	(flats) 280	yes	conv	Grade and staple are for one of three mixes.
C	8.5	SLMB 1 1/32"	none	see remarks	(brush) 120	no change	no change	no	perf	Spring weighted feed rolls. Neps down 2.2 per grain.
D	8 to 12.5	SLB 1"	none	10	120	35	3 mos	no	conv	No grinding. Mechanics do all oiling, repairing, setting, choke pulling, and clothing.
G	10.8 to 15	SLM 1 1/32"	39	33	(hand) 120	no change	22 days	see remarks	rib type	No grinding cycle. Experimenting with bolting feed rolls.
H	7	SLMB 1"	none	23	120	no change	see remarks	yes	rib type	Set backs and tops each 45 days, fronts 15 days (3-shift cycle), grind 8 to 12 months.
I	17.5	1 1/32"	none	yes	40	no change	21 days	yes	——	Changed to different screens but didn't report kind in use.
J	15	2" (syn)	25	see remarks	see remarks	see remarks	—	no	conv	50% of grinding and maintenance gone. Neps no problem, strip when cards load.
M	no change	high-low	no change	50+	120	37 to 55	no change	yes	conv perf	Likes conventional screens, grinds as needed. 14 years on metallics.
N	11.75	LM 15/16"	2	50	120	no change	—	see remarks	conv	Uses spring-weighted feed rolls.
O	11.5	M 7/8" & 15/16"	none	40	120	—	90 days	no	experimenting	Uses spring-weighted feed rolls.
P	15.25 @100%	M 15/16" - 1 1/32"	some	30	120	—	see remarks	yes	see remarks	Hasn't ground in 14 months. Uses special screens.
S	8+	SLM 1 1/16"	5.5	66	144	see remarks	see remarks	no	conv	Grinding time now halved. Sets flats each 39 days, grinds them each 19 days.
U	14.5	LMB 1 1/32"	none	40	120	doubled	(set) 3 mos	yes	yes	Grind as needed. Screen type not given.
W	15	——	none	see remarks	see remarks		no change	yes	conv	Changed screen angle, runs waste and cotton mix.

Legend: conv = conventional perf = perforated syn = synthetics

and one Superior Cleaner. That firm gives the Superior Cleaner the nod as being best in removing stalk or bark. Management hasn't decided if the new type grid bar in use there has helped any.

Management at *Mill F* reports "We haven't found the best machine . . ." The firm uses two No. 12 beater sections to clean the heavy trash and follow this with a Centrif-Air machine. Recently the firm modified the grids on the Centrif-Air and thereby upped its cleaning efficiency by some 50 per cent.

At *Mill H* there is a combination of Superior Cleaner and Axi-Flow cleaner that is doing satisfactory cleaning without doing fiber damage. The firm states that the new type grid bars for the Superior Cleaner are especially effective.

While the Cen-Tennial feed hoppers equipped with Areators feeding an SRRL opener-blender and separator do a good job in removing such foreign matter at *Mill P*, management there does not consider the layout as effective in removing pepper trash as they would like.

A single firm, *Mill U*, remarks that all opening and picking machines remove some trash but their cards do their best job by ejecting the foreign matter in the strips.

1960 Cotton Crop. What has been your experience with the 1960 cotton crop with reference to Micronaire, neps, spinning qualities, yarn strength, and yarn appearance?

What quality control measures have you found effective in overcoming yarn quality faults caused by properties of the 1960 cottons?

See *Table 2* for the replies to the first part of the question. Although the question did not request such, most mills seem to

have made crop comparisons directly with that of 1959. The plants largely ignored the portion dealing with quality control, but here are a few reports on that topic.

In moving to improve quality, *Mill D* reduced card speeds for converting styles, changed card settings to take out more short fibers, opened opener and picker to the limit to reduce the fine trash, and added twist on a few counts to up the strength.

Pressley and Shirley tests are made out of each shipment of cotton made to *Mill F*, and the firm checks all cotton for Micronaire and further gives it a dye test.

Mill H has not found any unusual yarn faults traceable to 1960 cotton, feels that quality-wise the crop is as good as or is superior to the 1959 crop. Management believes further that no new problems will confront quality control and processing because of the crop, notes a slight improvement in short fiber content.

To overcome faults in the 1960 raw stock, *Mill P* has instituted a complete quality control program, coupled with a complete machinery modernization program.

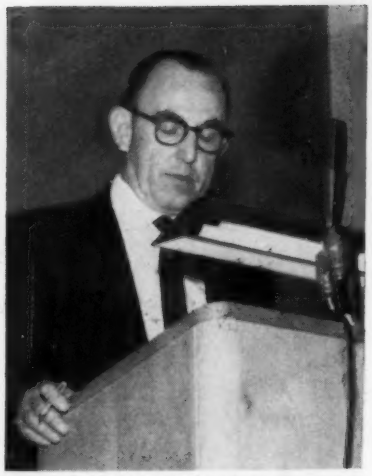
Automatic Stock Weighing. Does the use of automatic stock weighing devices on blending feeders improve blending and manufacturing performance? Is it possible to blend lower grades of cotton and maintain good running quality?

Generally such devices do grant an improvement in blending accuracy and the consequent absence of "peaks and valleys" in the blended stock smooths out the running quality. One of the responding plants stated that the devices are used there in blending synthetics with cotton but that they have not been used with pure cotton mixes.

The plants responding to the topic largely agree, with a measure of caution, that the weighing units will permit a drop in cotton quality without a sacrifice in running properties.

Mill F has said "By carefully evaluating the end product it is possible to lower the grades in cotton and use a wider range of fiber properties." *Mill I* says

Simmons—Carding



Wright—Spinning

"Yes, it is possible to blend lower grades in cotton with a wide range of fiber properties and maintain good running qualities in the mill." *Mill P* states "The grades and fiber range would, of course, have to be known . . ."

Pneumatic Lap Control Systems. Pneumatic pressure systems mounted on picker calender and counter sections, in the seven instances reporting, increased lap weights an average of approximately 20 pounds.

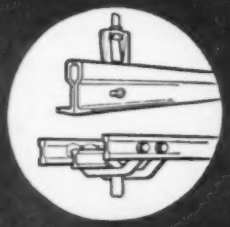
The top weight given is a 98-pound lap (up from 52 pounds) at *Mill N*, with *Mills F* and *O* (up from 42 pounds) following with 80-pounders. The balance of the plants turn out laps weighing from 70 to 74 pounds. Apparently the system permits lap weights ranging upward of the 98-pound high, with the plants selecting the lap weight most appropriate for its operation.

The heavier laps increase efficiencies, due to extended doff cycles, but there is no other obvious effort being made to up the picker production. The only quality improvements noted come from a couple of mills that find some quality improvement in the increased yardages and in the consequently fewer piecings that result; or as *Mill O* noted, fewer picker stops.

Savings in card or lap waste run the range from 25 to 40 per cent, being roughly proportional

T. H. Sherill, R. O. Simmons, Lee Wynn, and J. F. (Rip) Henderson during spinning discussion.

THE TRACK THAT NEVER WEARS OUT



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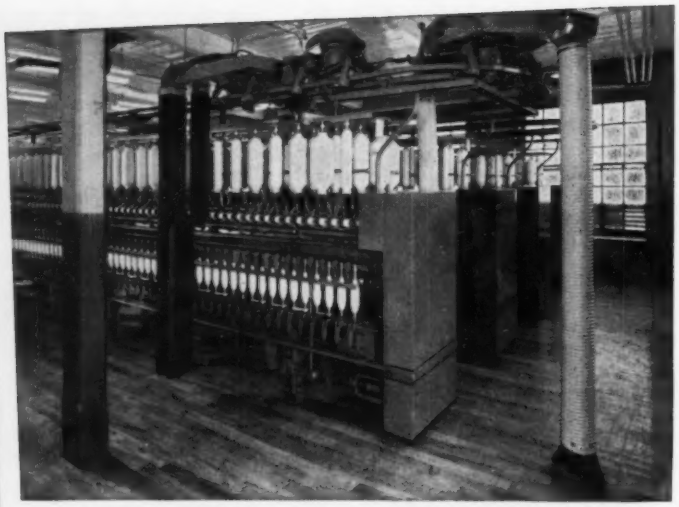
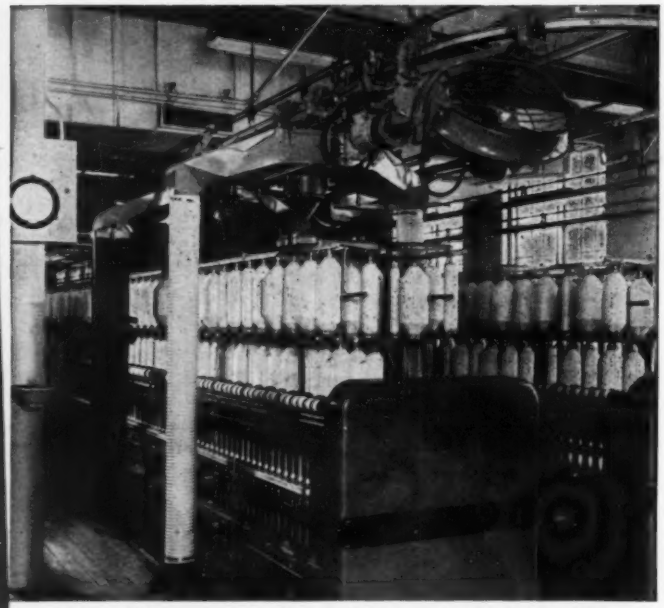


This creel mounted cleaner rides smoothly on Tri-Rail track and can never fall off. The three rails are rolled from high carbon steel.



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to the increase in lap running times. The mills are slightly (four to three) top heavy in reporting more maintenance being required of the systems. At *Mill F*, picker sides broke and bearings failed; *Mill N* has experienced no further demands since installing a pneumatic clutch. In three instances calender rolls have failed, and in a couple of cases solid steel rolls have replaced the former type(s) that failed.

New Flat Clothing Materials. Four types of flat clothing that roughly fit the categories of split-top, short-cut, metallic, and hardened wire draw various, and in some cases conflicting, returns from 10 plants. The split top wire used at *Mills D, H, N,* and *P* reduce nep count in every instance. One firm reports nep count down 19%; another reports it down 18%; and the other two report "fewer."

In two instances flat grinding cycle is increased (once from 15 days to 90 days) and in one case flat strips are down by 21%.

Frank A. Snyder, Coats & Clark, Inc., Thomasville, moves into the spot left vacant by the expiration of R. O. Simmons' term of office on the executive committee.

Short-cut wire has lowered nep count in *Mill H*, and has dropped waste 20% and doubled grinding in *Mill J*. Metallic flat clothing draws two opposite responses: *Mill H* reports neps down; *Mill D* reports them up by 11%.

TABLE 2

1960 Cotton Crop Performance

Mill	Micronaire	Neps	Spinning quality	Yarn strength	Yarn appearance	Remarks
C	higher	fewer	better	better	better	
D	same 4.4	more	better	down 5%	lower	Pepper trash hurts yarn appearance
F	varies widely	more	same	same	same	Nep count varies with growth region
G	higher	more	down	down	same	Blends by Micronaire
H	higher (4.2 to 4.4)	fewer	same	same	——	Presence of some metallic clothing makes it difficult to appraise actual change in nep count
I	higher (4.8)	more	down	down	down	——
L	same	same	same	same	same	——
P	variable	more	down	down	down	Micronaire readings fluctuate in cottons from same growth regions, quality is generally lower
S	higher (4.3 to 4.6)	fewer	same	down	——	——
T	higher	same	down	down	same	——
U	higher	same	same	down	down	——

"Try a Little Empathy"

■ EMPATHY is "putting oneself in another's shoes." It differs from sympathy in that it isn't *sharing* someone's feelings but rather being able to *understand*.

A former sales girl at Macy's, now a sales executive, says, "When I began selling behind the counter I was often shocked and hurt by customers' rudeness. Then one day when a woman started ripping into me, I suddenly thought, 'Why you poor thing. I know just how you feel. You're probably frustrated in some way and you're taking it out on me.' The woman must have sensed my changed attitude, because she began to smile and even apologized. Ever since, I've tried to look behind the front that people put up and ask myself how they feel inside. It's amazing how much more I like people and how much more they seem to like me."

Our everyday work requires frequent contacts with people. When large groups of people work together day in and day out, there are bound to be incidents which try our patience, petty irritations which cause hard feelings. EMPATHY helps us realize that another person's impatience, irritability, or shortness of temper may have been caused by unusual pressures, a recent unpleasant experience, or even an argument at the breakfast table.

Learning to use EMPATHY takes patience. It's necessary to remember always that EMPATHY works only as long as you remain objective, understanding the other person's feelings rather than reacting to them. But the effort is rewarding. You may be surprised at how much easier the day's work becomes for yourself and for others around you.—*Chemstrand Spinnerette*

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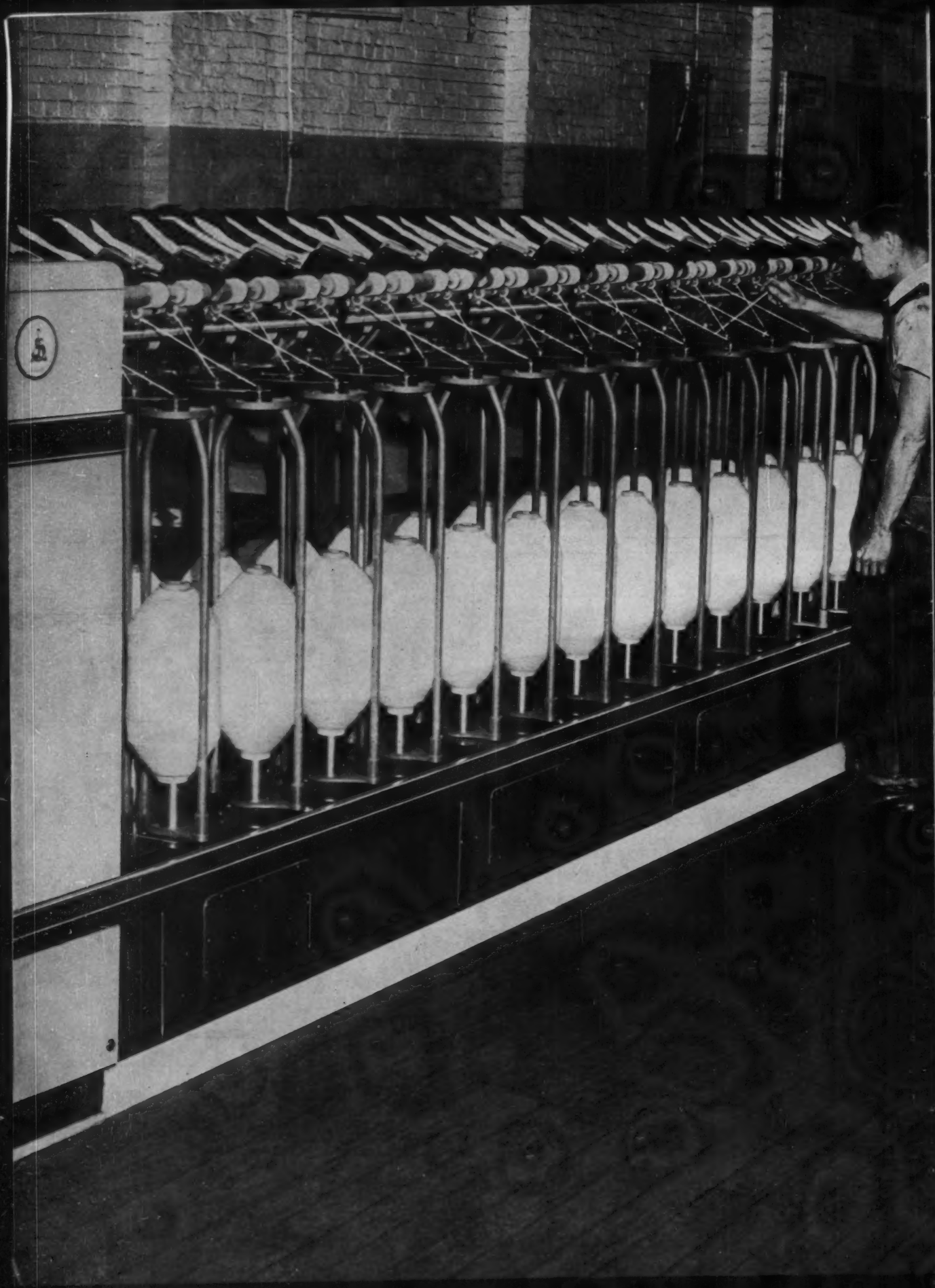

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Continued on page 185

Modern textile management

(from page 116)

and more recent Trend Points. The lesser weight must be such that the two weights together will add up to 100 per cent for the calculations to be correct.

The Over-all Rating Points thus obtained for each pattern serve management in the coordination of production with sales and in planning inventories in anticipation of peak season requirements. Large stocks of unpopular patterns and shortages of patterns in high peak season demand, are thus minimized.

Installing the Program. In installing any system that relies heavily on quantitative evaluation, a number of objections must be overcome before the procedures will receive wholehearted adoption. The following, taken from experience in installation problems, represents typical questions and how they were resolved:

1. It was argued that reliance on figures can be very dangerous, and that the salesmen have a better "feel" and "judgment" than "cold data." In answer to this, it should be stated that the information provided by the Rating Points is designed to *aid* in decision making, not to *replace* judgment. The chief value of the Rating Points is to serve as a brake to unwarranted overenthusiasm or excessive optimism on the potential market for certain styles and patterns, thereby avoiding overproduction and accumulation of "distress" inventories.

2. It was feared that the system would demand excessive time in terms of interviewing and clerical work. This may be true in the first preseason period. Once the procedures have been established, the time involved is minimal.

It should be remembered that the Sales Department spends a good deal of time anyway evaluating marketability on an informal basis. The Preference Rating system adds quantitative information to this endeavor. Clerical work required can usually be performed on a part-time basis by an existing staff member in the sales, production planning, or inventory control departments.

3. Some initial resentment by the sales force may be expected, and in one firm the title "inventory czar" was given to the head of the section concerned with point ratings and the meshing of production with anticipated sales so as to avoid unbalanced inventories. The salesmen soon realized, however, that inventories geared to market demand would provide more flexibility and give them more confidence in maintaining minimum prices to show a fair profit on each line.

Clerical work involved in the system can of course be computerized. The objections to the system raised initially are not very different from those generally occurring anywhere when quantitative methods are introduced to aid managerial judgment. It must be emphasized, however, that the Market Survey Program aids by enhancing and in no way detracting from the value of management judgment and decision-making.

OIL-STAINED CLOTH indicates a serious leak in a mill's profits. It's a sign you should find out about Texaco's "Stop Loss" Program **now.**

Texaco's "Stop Loss" Program can help you plug some profit-leaks

. . . and can boost your profits by as much as 4%

Oil stains can mean there's a leaky bearing, somewhere. Or a careless oiler. But their real significance is this: your mill may be overlooking an opportunity to control costs as tightly as it should.

By organizing lubrication, your mill can increase net profits by as much as 4% per year! Where should you begin? Start with Texaco's "Stop Loss" Program. It enables any mill to realize all the savings available through good lubrication practices.

"Stop Loss" starts with a thorough study of your mill's lubrication requirements, from bale room to cloth room. This is followed-up with recommendations for a lubrication control system fitted to your mill's needs. Then Texaco provides the basic "tools" needed to make "Stop Loss" work easily and effectively for you.

See how "Stop Loss" can work for you! Send for more information. Then ask to see our new film, "Stop Loss with Organized Lubrication," which dramatically illustrates the many new opportunities there are for savings.

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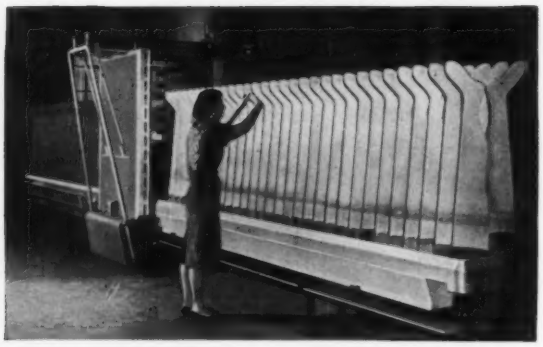

TURBONIZING—

for the feel of luxury
in fit . . . in wear . . .
in elasticity . . . in appearance

The new Turbo Dye Boarder is being used in over a dozen countries to bring automation to hosiery finishing. Preboarding, dyeing and impregnating, postboarding, and drying are combined in one processing cycle called Turbonizing. Production capacities are increased, with two operators producing 160 to 170 dozen pairs in every 8 hour shift. And reduced handling automatically means more firsts.

For fast, efficient, fine quality finishing . . . and increased profits . . . see the Turbo Dye Boarder in operation. Or write for bulletin.

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For further information use Handy Return Card, Page 173

KNITTING SECTION

CLEAN ROAD TO QUALITY

Roanoke's quality control: fix, oil, inspect, and CLEAN the 300 machines

Staff prepared

Exclusive

CLEANLINESS is considered a major factor in maintaining a high level of quality at Roanoke (Va.) Mills, Inc. This progressive mill performs manufacturing operations from knitting through dyeing, bleaching, finishing, cutting, and sewing finished garments for the knitted underwear, pajama, sportswear, and outerwear trade.

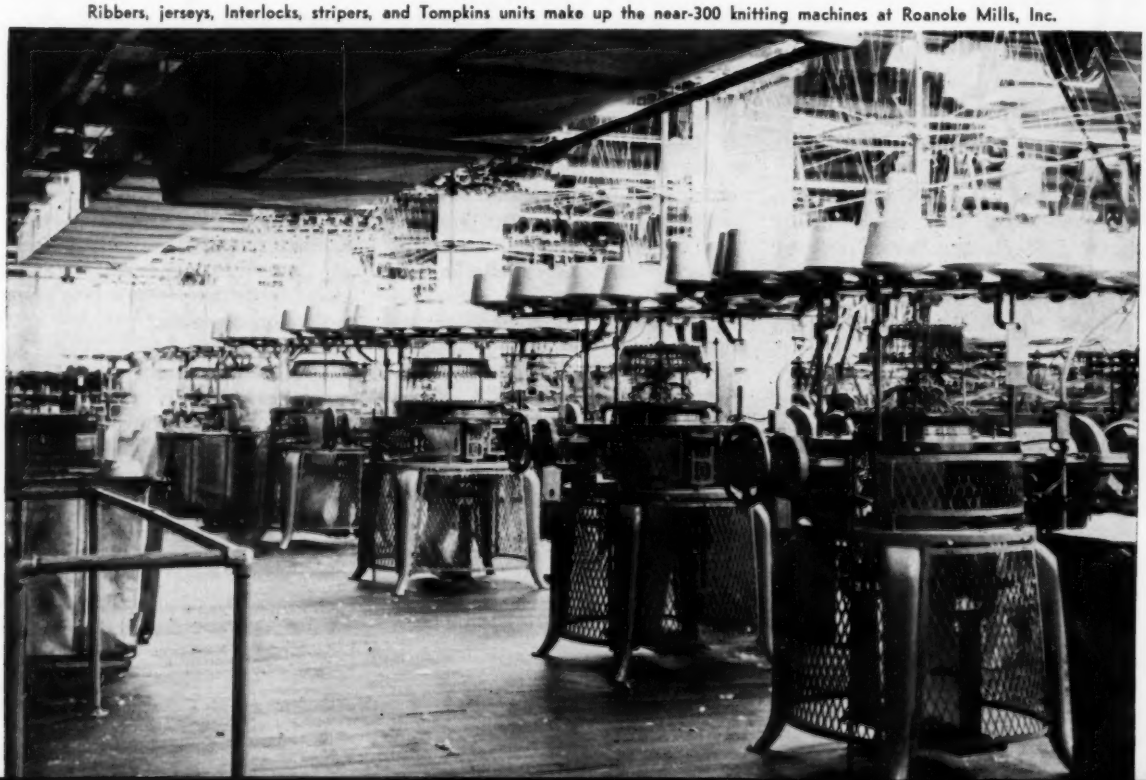
Floors and machines are kept clean, thereby helping prevent rust on the machines as well as keeping the fabric free of holes and imperfections usually associated with poor housekeeping practices. Knitters clean the machines once a day, and one man does cleaning chores on a full-time basis by blowing off machines, wiping oil excess from machines, sweeping floors, and any other special cleaning that requires attention from time to time.

Knitters must keep their hands clean, washed frequently, and especially for tying on ends. Once a quantity of cloth made of Textralized* yarn was soiled with

Continued on page 141

*A stretch, crimp-type, nontorque yarn by Joseph Bancroft & Sons. Co.

Ribbers, jerseys, Interlocks, stripers, and Tompkins units make up the near-300 knitting machines at Roanoke Mills, Inc.



The heel of a 4-feed product photographed in a relaxed state and folded along the lines created by boarding. The instep is "baggy."

4-feed sentiment roundup

4-feed ladies' seamless hosiery machines must guard quality and style, survey shows

Staff prepared Exclusive

OUR INTENTIONS are not to condemn nor condone 4-feed hosiery production. However, the condensed comments of some industry representatives may help to document current reaction to some extent.

Much has been printed, and said, about the controversy arising from the availability, in this country and abroad, of 4-feed seamless hosiery machines. Extended conversations among authorities in the hosiery business bring out several pertinent facts that appear to explode predictions that disposable hosiery at 25c per pair are to appear on short order.

It is commendable that our machine builders are alert and ready to build whatever demand calls for. On the other hand, investors in the hosiery mills who plan to stay in the business indicate that they have no plans for jumping into heavy production of a type of goods which has little in fact to assure a promising future so far as the fickle consumers are concerned.

One industry spokesman stated that 4-feed machines can't do anything that existing machines aren't capable of doing, that they are even limited in what they can do. In other words they are much less flexible in operation, being capable only of producing a knitted tube at a fast rate. In view of the fickleness of the consumer, investment in such machines would go beyond the normal risk involved in purchasing new machines.

Quality, Style Must Stay. Important among current comments in the trade is that price can be cut further. But several eminent hosiery authorities indicate that this is basically wrong, unless the quality element is given equal consideration.

Although we are in the "leg covering" business, women do not buy stockings, for the most part, solely because they are "leg covering." Sales outlets indicate that women seek stockings that do something favorable for their appearance—and add to their comfort. In full view of the sales barometer, it appears senseless to undertake the production of stockings that offer milady nothing but low price.

Heel and sole collapsed along the boarding lines. Note the lack of symmetry, the "unsightly strings" along edges of reinforcement.

It takes time to build customer confidence, but very little time is required to destroy it, according to one spokesman. Maintaining a satisfactory quality level in today's hosiery is trouble enough to make the staunchest "progressive" blanch at the prospect of boarding a simple tube into a uniform fit.

Furthermore, production has not been a problem in the hosiery industry; finding sales appeal has. "We can produce more stockings cheaper by converting our machines to knit tubes if we find a demand for such merchandise. At present, we have no demand in evidence," this man concluded.

The ladies seamless hosiery business is not suffering from lack of production. The market consistently demands quality and style to bolster sales appeal to American women who buy hosiery that flatters their legs and helps provide an element of style and fashion.

Success of the higher priced, branded lines of ladies hosiery attests to the fact that promotion, fashion, quality, and sales appeal attract buyers; not price alone. There are exceptions in the minority, of course.

Experience Lacking. Most of the discussions about 4-feed ladies seamless hosiery knitting machines are simply conjecture. There has been no actual experience in terms of money savings to be realized by hosiery produced on such machines.

Experienced mill men agree that the cost saving is likely to be about 20c per pair at the consumer level, retail. As most women do not seek such savings at the expense of fashion, style, and quality, no demand for such goods is evident in this country.

The few cents per dozen saved in such production may be more than offset by the loss in market created by poorly styled, ill fitting, poor performing hosiery.

The recently revealed results of the Price Waterhouse survey* as amplified by the National Association of Hosiery Manufacturers seems to have been accurate and worthy of note in the current discussions in view of the narrow differential in costs (5c per dozen direct labor cost) among hosiery producers, on half hose regardless of locale and equipment used. "Tube" stockings would have to be sold for less.

Also, it is worthy of note that the original seamless machines introduced into this country were not without faults and almost killed the market for seamless stockings—that and the lack of know-how in finishing. Many of the early machines were sold for less than half their value without ever being uncrated by the original purchasers. Probably, as is the opinion of one executive of a large hosiery mill group, there will be no massive move to replace existing machines with the 4-feed units.

Some manufacturers ridicule the idea of widespread use of 4-feed seamless machines; some are casually interested; and some are upset and predict downfall of the industry as a result. But these latter ones are the worrying kind anyway.

At least one eminent consultant has been approached by several European mills equipped entirely

* The Price Waterhouse survey, sponsored by the National Association of Hosiery Manufacturers, revealed that, regardless of geographic location, production of men's, children's, and misses' socks showed no more variation in direct labor costs than 5c per dozen, up or down, from the average. Such conditions may be reflected in the ladies seamless mills also, although the conditions are not established as fact in the seamless branch of the industry.

■ One of the hosiery buyers we interviewed suspended a 4-feed mesh sample at arm's length. "Shapeless," she said. "Completely shapeless, proportions all wrong. On a normal leg the ankle will sag into a stack of wrinkles. Looks like a bad fit."

She slipped a hand into the stocking and opened her fingers to spread the fabric across her palm. "The loops make a spiral pattern around the stocking, almost as if the stitches were being dropped."

"You don't think it is by design?" we asked.

"Looks more like a dropped stitch. I see a lot of mesh but never such a pronounced pattern."

We remembered there easily could be feed troubles, what with four of them running on each machine. But we later checked the hose out with a knitter and found only the pronounced effect that had startled her.

She flattened the mesh stocking on her desk alongside some plain knits with reinforced sole, etc.

"Heels off center. Women expect heels to balance, not slip around to the side, and to have the same height. They'll kick about this."

"Heels and soles formed off balance won't straighten up when the stockings are pulled on," she explained.

We couldn't think of a fitting reply, so the talking stopped for a moment.

"Twenty-five-cent hose," she blurted.

We almost flinched, for while we had run into that figure during our survey, it hadn't carried the inflection she gave it.

"Not even a good grade of irregulars," she continued. "Third-class merchandise."

She waited while we finished our notes. "Anything else?" we invited.

"I guess not. Hope I haven't offended you, but you asked for my opinion."

"Not at all," we swallowed. "But we may run these out to the street peddlers and get some reactions there."

"Please don't. Let those stay in Europe or wherever they are."

"You think they have a place as disposable stockings?"

"Somebody will buy them, but not from us," she replied.

THE EDITORS

with the 4-feed units and who have serious quality problems. This consultant indicated that the European market is becoming increasingly sensitive to the quality of such hosiery.

Executive Sentiment. Some of the miscellaneous comments made about four-feed seamless knitting machines:

The shape of 4-feed things to come?

"Success or failure of the machine to make a substantial impression among our mills may depend to some extent on economic conditions in this country in the next four years."

"The advantage lies in higher production but the more feeds a machine has, the slower it must run in one sense. Single-feed machines could make more stockings of the tube type than two-feed machines when the two-feed machines have to knit the heel and toe.

"More downtime is likely on multi-feed machines, and it takes longer to fix them usually, when anything does go wrong.

"No advantage is likely to be netted because any cost advantage possible in manufacturing would be more than offset by the lower price obtainable for the finished stockings.

"If quality merchandise is made, the hosiery industry is better off in every way, including profitwise."

"A majority of the seamless machines in this country are paid for, or at least nearly so. If a mill should buy a new type of machine, a large investment would have to be paid off before any real profits were realized."

"Apparently, the machines are not generally available in this country. Several mills have tried unsuccessfully to obtain trial machines."

"Nylon yarn has a certain amount of elasticity but there are limitations. If the entire stocking is made of 15 denier yarn, the boarding process will remove elasticity at critical areas, thereby producing weakness, wrinkles, and poor appearance at the instep portion. Also, unsightly strings are left in the areas where the sole is reinforced. 40-denier yarns are commonly used in the heel and toe portions of more conventional seamless constructions.

"Seconds currently represent about 10-12 per cent of the market, it is estimated. These are of more acceptable quality than seconds from four-feed machines are likely to be, and more of a loss is indicated for the four-feed seconds.

"Labor and material costs are close to equal on seamless stockings made on machines currently used. The same should apply to goods made on four-feed machines. A knitter can handle only so many stockings, and hosiery mills have, for the most part, improved efficiency to a point where labor efficiency may be approaching optimum. The Price Waterhouse survey on half hose reflects this likelihood to some extent.

"Until more development work is done and a satisfactory yarn compensator is made, it will be most difficult to make a decent four-feed stocking. Yarn is variable, and tension varies from cone to cone. On single-feed machines, size may vary, but no real harm is done. On two-feed machines, the problem already exists in keeping

Continued on page 142

Clean road

(from page 137)

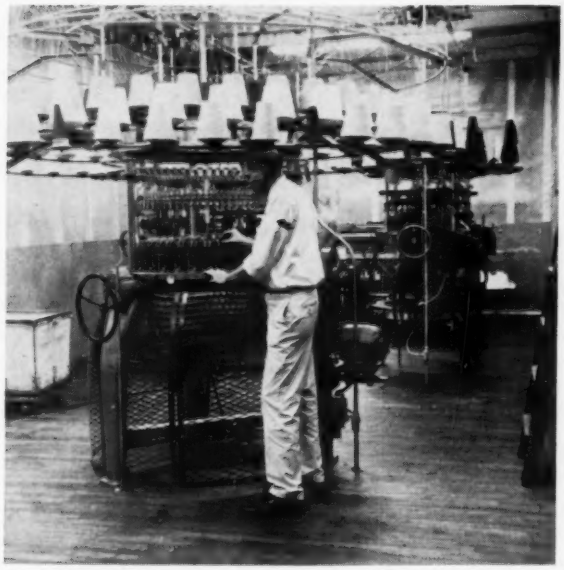
spots, and a long investigation of these spots finally traced the trouble to knitters tying ends with dirty, oily fingers. Everywhere an end was tied on, a spot appeared in the fabric, and the spot would not wash out. Now the clean hands rule is carefully observed.

Another major factor in maintaining a high level of quality in this mill is found in the emphasis in keeping the equipment in good condition. The knitting foreman keeps a log on each machine to keep maintenance on an orderly basis and on a staggered schedule. There are over 250 knitting machines to be maintained. These include ribbers, jerseys, Interlock, selected stripers, and Tompkins machines.

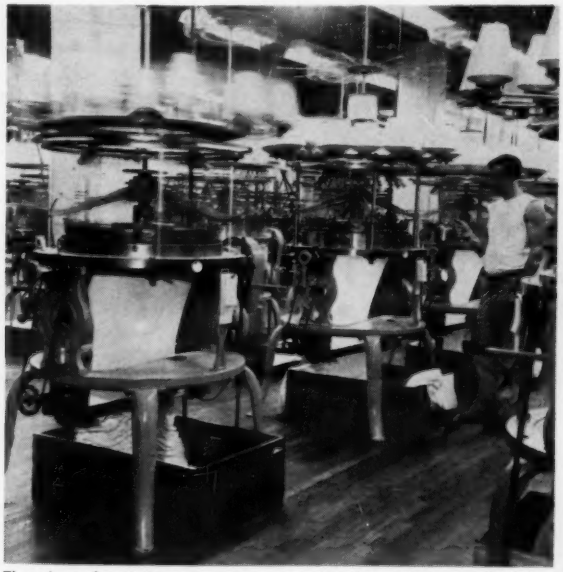
Knitters are on a piece work basis and are required to inspect the cloth on each machine at least once every hour. Any irregularities are reported to the mechanics for immediate attention.

Mechanics are assigned a number of machines to maintain, and they inspect on a roving basis while not on a specific job. Stitch control is maintained by having the mechanics count stitches and adjust stitch cams to suit the fabric being run on each machine.

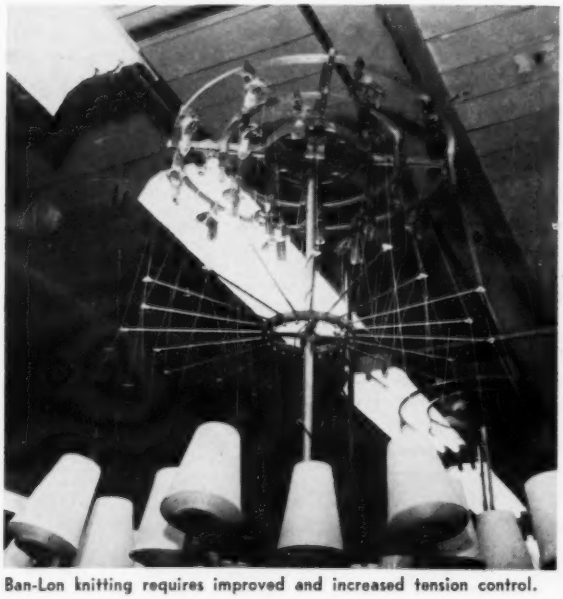
Reneedling is done on a regular schedule, depending upon the number of pounds produced on



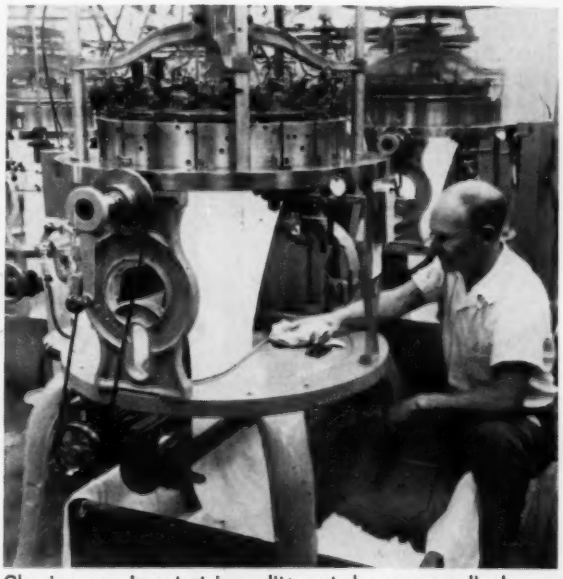
This SAAF—CN Supreme striper is latest addition to equipment.



The planned maintenance program requires lubricating on schedule.



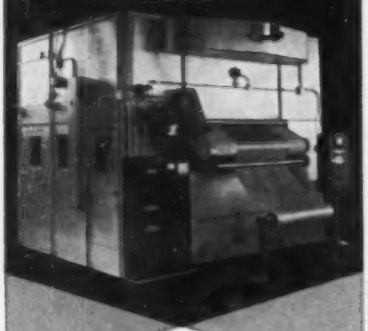
Ban-Lon knitting requires improved and increased tension control.



Cleaning, very important in quality control, goes on endlessly.

relaxed drying for broad wovens

the REELAX-JET



ADJUSTED OVERFEED—Cloth speed precisely regulated.
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each machine. This procedure helps keep the quality level high. On synthetics, needle life is sometimes 30% less than on other fibers. Textralized yarn is an exception; needles last 20% longer on it because earlier problems were solved. Now there is less yarn sloughing, filament breakage, looped filaments, and imperfections to damage needles, and there is no lint build-up.

Most of the improvement is due to changes made in the yarn package. However, improving and increasing yarn tensions and properly adjusted stitch cams helped improve the work considerably.

This was one of the first plants to run 70/1 denier nylon satisfactorily, and efficiency has been improved from 75% to the current level of 98% efficiency on 48-gauge, 24-cut Interlock. 40,000 pounds is the usual production on Interlock machines before reneedling. Seven to eight per cent of current production is on Ban-Lon** fabrics. Two to three per cent is on other synthetics, and the balance of production is on all-cotton fabrics.

Lubrication of needles is continuous and automatic except on Tompkins machines. Other lubrication chores are performed as required.

Strong demand for its products are evidence of the good job being done in this mill, and some outside knitted fabric has to be carefully purchased to meet the demand. Within the last five years, quality has been upgraded throughout the entire line of products made in this plant, and value of production has more than doubled (not counting inflation) while maintaining about the same number of pounds produced.

The change has been to more flexibility and versatility. For example: About 50 different styles in pajamas alone in about 36 different sizes are made for men, boys, girls, and women (18 for men and boys, 18 for girls and women).

Knitting machines range from 8 to 24-cut and include latch-needle and spring-needle units for plain to fancy knitting. Yarns used range from 7s to 50s combed and/or carded cotton and any wool or synthetics in demand.

An adequate array of finishing equipment is maintained to provide finished goods to any customers specifications. There are more than 12 layup machines and over 500 of all types of sewing machines in operation. Production of garments amounts to over 10,000 dozens per week.

Knitting and dyeing are on a three-shift, five-day week basis, and more than 750 persons are employed in these operations from knitting through garment making. Cutting and sewing are done one shift a day in well-lighted and fully air-conditioned departments.

All production scheduling is done on data processing equipment which permits spot locating of any batch of goods in process. This permits predetermining delivery date to customers.

Folding, pressing, boxing, and shipping are done at the Lakeside Division, Salem, Va., about 5 miles from Roanoke. Finished goods are sold under the Akom and Roanoke Mills labels, and also under customer labels on a contract basis—and all are continuing to earn a well deserved reputation for this modern mill.

**Fabrics made of Textralized yarn.

4-feed survey

(from page 140)

alternate courses even. On four-feed machines the trouble becomes even greater. Perfect control over heat and humidity are necessary already and would be even more necessary on four-feed production. Seconds are likely to be higher, based on experience with current two-feed machines."

"It appears that our good machine builders have made such a machine available as a defensive measure against foreign machine builders. Also, it is available should a demand actually arise for such hosiery."

"There would be no savings on seaming the toe because this can and is being done on other goods at the present time."

For further information use Handy Return Card, Page 173

"No more tight ends in our warps"

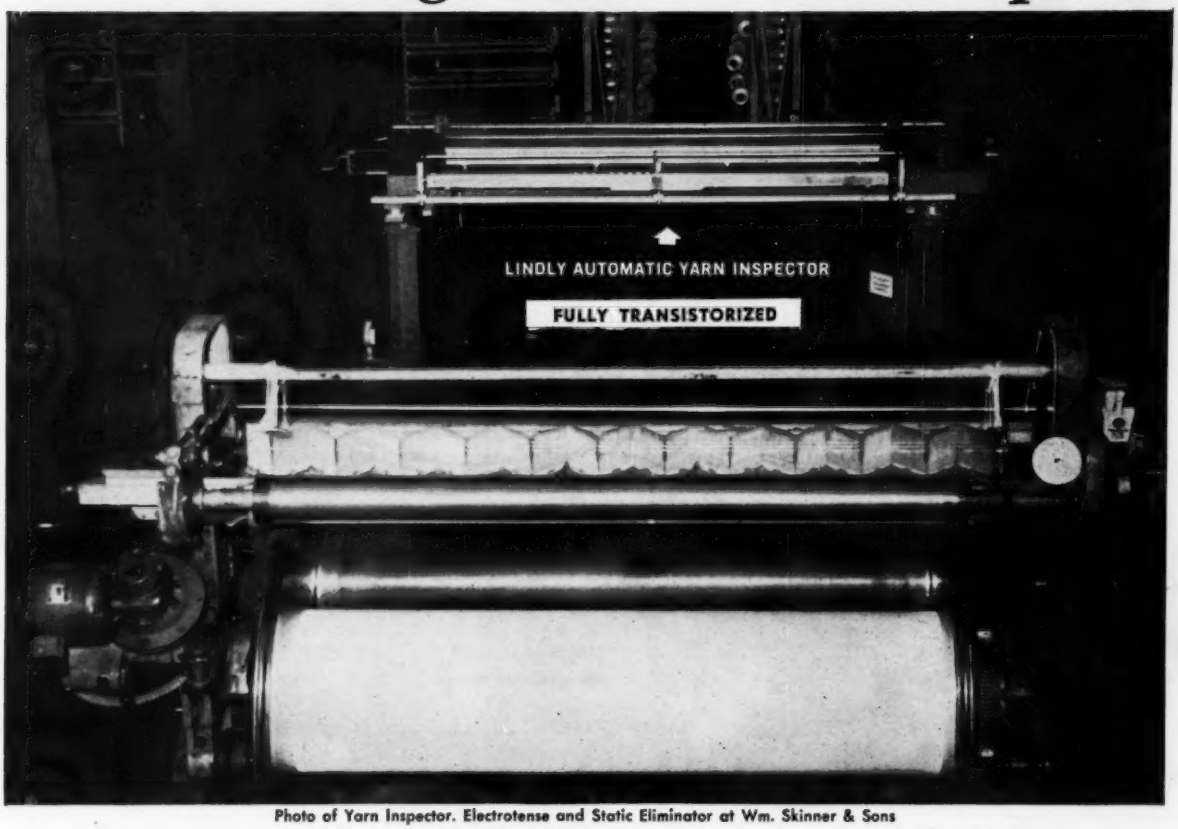
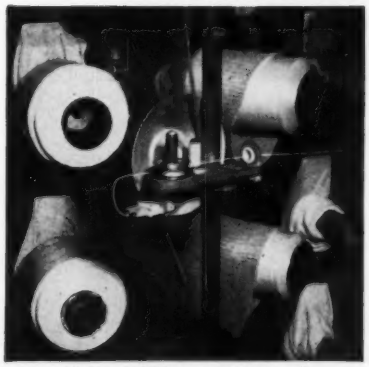


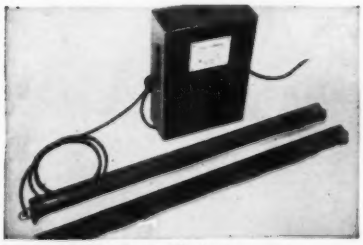
Photo of Yarn Inspector. Electrotense and Static Eliminator at Wm. Skinner & Sons

The LINDLY Electronic Triumvirate Gets the Credit

YARN INSPECTOR – ELECTROTENSE – STATIC ELIMINATOR



Closeup of Electrotense in creel.



Lance Static Eliminator — not visible in installation photo.

When we asked William Skinner & Sons, Holyoke, Mass. for a report on their installation of a Lindly Automatic Warp Yarn Inspector, the Lindy Electrotense in their creel and a Lindy Static Eliminator, their answer was prompt and enthusiastic: "No more tight ends in our warps."

However, when we asked them to go back temporarily to warping without the Lindly controls, so we could get some comparative "before" data, they flatly refused. "Why should we go through that again, when we don't have to?" they asked, and we can't blame them.

Since Skinner didn't need comparative data to prove the value of the Lindly Electronic Triumvirate, we doubt if you would either. So why not try an installation? Here's what the triumvirate is and does:

THE LINDLY AUTOMATIC YARN INSPECTOR is a high-speed, ultra sensitive photo-electric instrument for detecting yarn defects in warps, such as broken filaments, strip-backs and fluff balls. It can be made to operate a counter, a signalling device, or to actuate a machine stop switch — singly or in combination for any degree of imperfection.

THE LINDLY ELECTROTENSE for warp creels, winders, twisters, knitting machines, etc. provides completely uniform tension for any number of ends and the tension for all ends can be varied by turning only **one** dial. It consists of two conventional discs with an electromagnetic coil beneath. The lower disc is of non-magnetic brass, while the upper disc is of magnetic iron. When the coil is energized through a central electronic control, the upper disc is attracted downward, pressing the yarn between it and the lower disc in any degree desired. The pressure is pulsating, which prevents backup of twist and helps keep the tension discs clean and free turning.

LANCE STATIC ELIMINATOR, made in a variety of models, has a textile application wherever static electricity is a problem. It carries a high voltage discharge from pointed electrodes into the air, causing the fibre to be surrounded by ionized air, which serves to discharge the static electricity accumulated all around the surface of the fibre. Whereas the voltage is high enough to ionize effectively the air, it cannot harm the operator, who accidentally comes in contact with the electrodes.

FOSTER MACHINE COMPANY
ELECTRONIC SALES DIVISION, DEPARTMENT TI-9
Westfield, Massachusetts, U.S.A.
Southern Branch, Route 85, Belmont, N. C.

A close look at warp sizing

Uniformly sized, individual warped yarns provide fast, easy weaving and result in a perfect cloth. Clinton Starches are designed to reach every last end with consistent sizing which reduces friction, smooths fuzzy yarns and minimizes shedding at the slasher and loom. The results are unchallenged quality in all fibres from hard to weave poplins to breezy summer weights. To weave the most profitable sales story — count on reliable Clinton Starches.

Technical Service Always Available

CLINTON CORN PROCESSING COMPANY

CLINTON, IOWA

For further information use Handy Return Card, Page 173

HOW OTHERS MANAGE

How to refinish calender rolls—a reply

(In our June issue, page 165, we published a request for information on dressing cotton or rubber rolls used in calendering or padding. Responding to that inquiry, two firms well known to mill men as being authorities in the field of textile rolls supplied the following advice. Both in-place and lathe grinding techniques are treated in the replies that appear below the inquiry, reprinted here for the sake of clarity.—The Editors)

THE EDITORS:

Can you put us in touch with mill men willing to guide us in dressing or tapering cotton or rubber calender and padding mangle rolls? We are more concerned with methods of dressing cotton rolls while they are mounted in the calender.

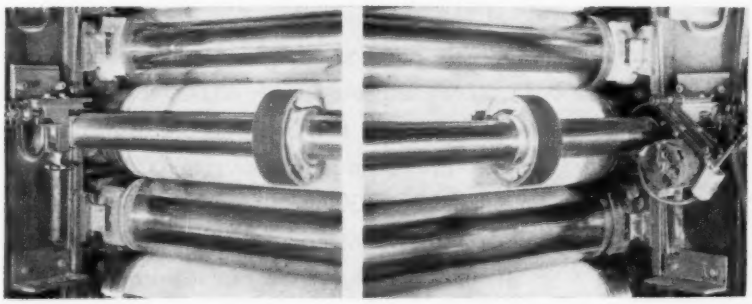
CONTRIBUTOR NO. 1310

THE EDITORS:

Approximately three years ago we developed a grinder that will grind all types of rubber rolls (latex to hard) as well as cotton, wool, husk, and paper-filled in place on the calender.

The illustration shows our grinder refinishing in place a cotton-filled roll on a large super calender of the paper-mill type. With this method of roll redressing it is possible to establish a planned program of roll maintenance that allows the downtime to be scheduled whenever production can best permit it.

B. S. ROY & SONS COMPANY



A Brand New Contest

Win $100

Get Busy Now – Win $100

Every kink, short-cut, time-saver, or quality improvement suggestion entered in the contest will be paid for at current space rates immediately upon acceptance, and the $100 award will be made to the winner as soon as all entries are judged.

The contest rules are simple:

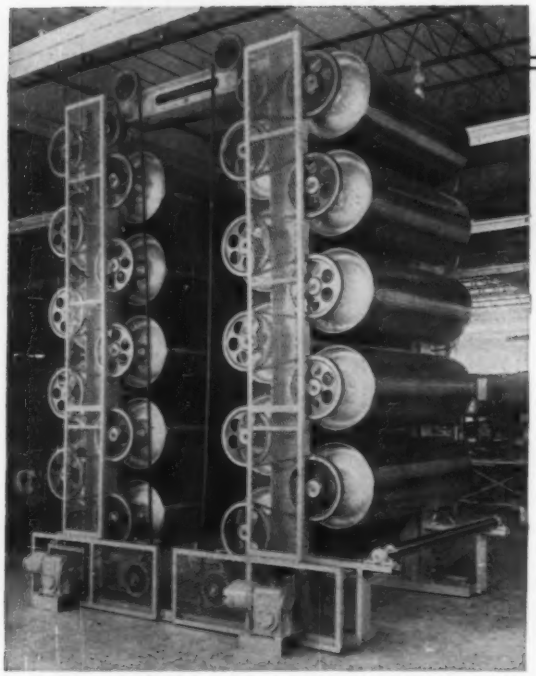
► All contributions must be postmarked not later than midnight, December 15, 1961.

► No limit to the number of entries an individual may submit in any one contest.

► All entries paid for upon acceptance — no waiting. Extra payment for photographs that are usable. Extra consideration is also given kinks accompanied by legible pencil sketches or drawings.

► Entries must not have been published previously and must not be submitted to any other publication.

► Send your contest entry to: The Editors, TEXTILE INDUSTRIES, 1760 Peachtree Rd., N.W., Atlanta 9, Ga.



All parts are completely erected and tested in our shop before dismantling for shipment.

Cocker
Cloth Ranges

Low Initial Investment

Low Maintenance

Streamlined production in Cocker's new and modern plant has resulted in attractive prices for this fine equipment.

Cocker engineering has produced a more rugged machine to give longer trouble-free service, and has added features which improve operation.

Journals have been greatly improved, with 60,000 lbs. tensile strength instead of the usual 35,000. Seals and bearings are assembled in a single self-aligning unit to provide a leakproof seal.

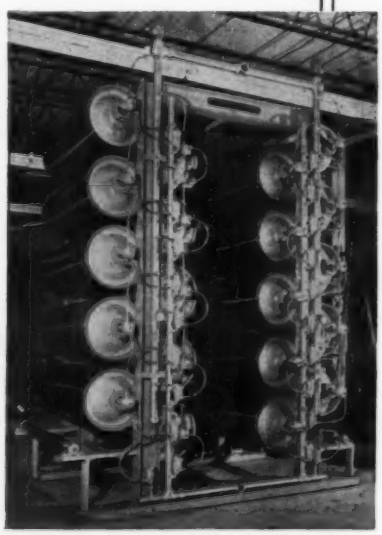
Drums can be either 23" or 30" with faces up to 144", and are ASME Coded up to 125 PSI. Accurately matched cylinders assure a total runout not to exceed .045.

V-Belt Drive with automatic belt tighteners require practically no maintenance and run smoothly and quietly.

Drums can be heated from one or both sides, using either rigid or flexible tubing for steam and condensate return.

Base columns and cross members are of rigid construction to permit accurate alignment of all members.

Cocker will engineer these fine cloth drying ranges to fit your exact requirements. Write today for free consultation.



THE LEADER AROUND THE WORLD

COCKER Machine and Foundry Co., Gastonia, N. C.

Plant and Offices at Ranlo, N. C. (Mailing address, Gastonia, N. C.)

WORLD'S LARGEST DESIGNERS AND BUILDERS OF COMPLETE WARP PREPARATORY EQUIPMENT

For further information use Handy Return Card, Page 173

THE EDITORS:

We recommend this procedure for turning down or refinishing paper or cotton calender rolls when the work is done in a lathe.

If the rolls are to be mounted on their own centers, make sure the centers are true, and redraw or recenter them as needed. If re-centering proves too troublesome, chuck the roll within universal jaws and center the other end in a steady rest. In this way the outer surface ends up running concentric with the journals.

In service the roll develops a very tough, hard outer crust containing possible bits of imbedded metal, a combination requiring a high-carbon steel or carbide-tip[1] tool. *Never use the diamond-tip tool for this roughing cut.*

We recommend a tool at least 5/8" square, mounted as close to the tool post as possible. Set the tip a bit above the center position (never below it) and if chattering occurs check for looseness in the cross-slide gibs. Vibration here spoils any chance for a good roll finish.

Make the roughing cut from 1/16" to 1/8" deep at a speed approaching 350 feet per minute. Set the feed screw to turn 40 rpm and remove the old surface until the new stock is uniform in hardness. It is easy to economize too much on diameter and end up with a surface that looks good but which contains areas of the old hard crust. Test the new surface to make sure it is uniformly lively across the entire face.

Make the finishing cut with the diamond-tip[2] tool. Set the speed as high as the mounting will permit.

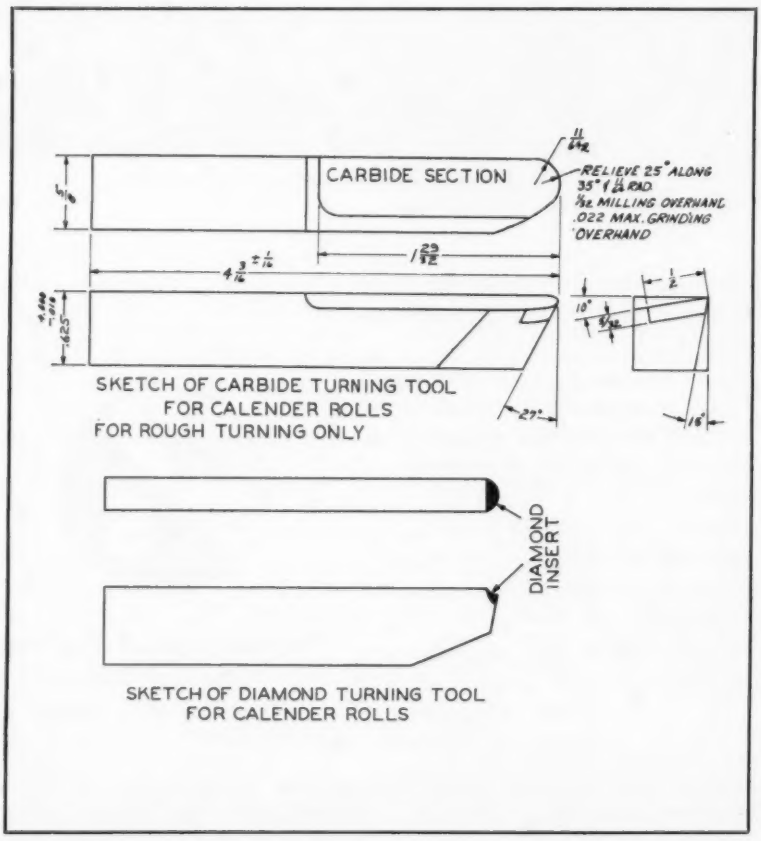
If the lathe is equipped with the usual carbon steel tail stock (live center) keep the cutting speed in the area of 350 feet per minute. If it has a hollow tail stock (live center) with high speed steel point and provisions for internal oiling, use speeds up to 700 feet per minute. Keep the feed screw speed in proportion so that with a 700 feet-per-minute rate the feed screw will be turning 80 rpm.

Adjust cutting depth to vary with cutting speed, using about 1/32" with the 350 speed and about 1/64" with the 700 speed. This higher speed is easily reached with the practice of turning "to the journals."

Remember to take special care of the diamond-tip tool. Store it in a box padded to keep the cutting edge from being chipped and dulled in moving. When it develops nicks or becomes dull, have it sharpened by someone who knows his business and is equipped to do the work. If it is cared for properly—don't let it cut into roll heads and don't feed it too fast—it will last a long time; think of it as a tool made for finesse, not coarse work, and treat it as a fine instrument.

Finally, test the refinished roll for "lay" or "grain" and nap. All such rolls have nap, so pass a penknife blade around the roll and study the direction nap wishes to assume. If the blade slips smoothly around the circumference, it's because the nap naturally "lays" in that direction. Resistance shows the blade is going against the grain or lay. Set the roll in the calender to revolve in a direction to lay the nap.

B. F. PERKINS & SONS, INC.



SKETCH OF CARBIDE TURNING TOOL FOR CALENDER ROLLS FOR ROUGH TURNING ONLY

SKETCH OF DIAMOND TURNING TOOL FOR CALENDER ROLLS

[1]Carboloy, Box 32, Roosevelt Park Annex, Detroit 32, Mich., supplies carbide-tip tools to Perkins' specifications.

[2]Perkins lists Arthur A. Crafts Co., Inc., Kenmore Sq., Boston 15, Mass., as the supplier making diamond-tip tool of the required specification.—No. 10820.

No squat, no stoop, no strain

THE EDITORS:

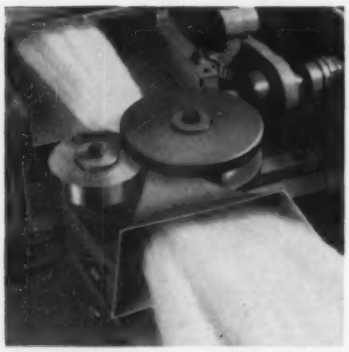
We have eliminated much of the drudgery associated with hand truck use, especially since we sometimes perched a knitting machine on top of one and went half skidding, half carrying it across the floor. It was as simple as adding a caster to the middle of the back brace.

We removed the truck legs and substituted a single caster a size smaller than the main wheels. It doubles as legs and makes it possible for us to "wheel" a knitting machine around without snapping our joints, straining our backs, doing pratfalls, and bugging our eyes—and scratching up our floors.

CONTRIBUTOR NO. 1333

NEW WARNER & SWASEY SERVO-DRAFTER

provides weight control accuracy within 1%



Measuring rolls, *acting as a "sensing device", detect minute variations in weight of entering stock. These variations are automatically transmitted to a rotating memory wheel.*

Memory Wheel *introduces a time delay in machine response, allowing entering stock to travel from measuring rolls to draft rolls, and indicates changes in faller bars speeds.*

Available with can or ball delivery, automatic or manual doffing.

This new single head, single delivery Servo Drafter Intersecting Draw Frame has proven that it will produce higher quality yarns by maintaining consistent yard-for-yard sliver weight.

Extensive tests in various leading mills indicate that you can expect weight control accuracy within 1%. In a single draft, the machine can correct infeed weight variations of ± 25% in wools, synthetics, or blends. Calibration of the servo control during stock change-over is simple and can be done while the machine is running.

The new machine, which operates at a mean speed of 1500 D.P.M. retains all of the time-tested features of the Warner & Swasey Pin Drafter®, utilizes a combination hydraulic and mechanical system for simple maintenance and long-term operating dependability.

For complete facts on how this machine will fit into your blending, precombing, top making and drawing room operations, get in touch with our nearest sales office.

® Reg. U. S. Pat. Off.

You can produce it better, faster, for less... with a Warner & Swasey

TEXTILE MACHINERY SALES OFFICES—Main Office, Factory and Export Sales: 5701 Carnegie Ave., Cleveland 3, Ohio • P.O. Box 215, 20 Chestnut St., Needham 92, Mass. • P.O. Box 4000, 624 Pecan Ave., Charlotte 4, N. C. • Suburban Square Bldg., Ardmore (Phila.), Pa.

For further information use Handy Return Card, Page 173

How to build your own porcupine drawing

(We are departing from our usual procedure of running short items in this department to run this feature-length contribution in two parts. Look for the second installment in October.—The Editors)

IN 1938 the author, while engaged in spinning research on 2½″ staple for a fiber manufacturer, began exploring the possibilities of using porcupine drawing on the cotton system.

The resulting system recorded here is largely the result of the author's efforts—the fiber manufacturer wished to emphasize that his fiber processed well without machinery modifications of any kind—to perfect the application. He worked both in a home workshop and with the fiber manufacturer's facilities.

Both the author and his employer agreed to keep the process secret and not to let it become the subject for a patent. Now that the working agreement is ended, the author is making the idea public 22 years after he began toying with it.

The system received a thorough baptism of fire before it was adopted as a working solution. It had to be adaptable to existing cotton-system equipment and adjustable to work all types of fibers, blends, and a reasonable staple range.

Experiments covered several growths of cotton and many types of synthetics in pure mixes as well as in blends. As the product of each experiment received the most severe and critical of physical testings, 17,000 pounds of stock "went through the pins" before one of the trial frames was allowed in a production line. Trial runs worked so well that "further preparations" were devoted to the system.

The E. H. S. (French for single porcupine drawing — etirage herrison simple) drafting element utilizes a porcupine or spiked roller in the position normally occupied by the third bottom roll of a four-roll drawing frame. Originally, it was designed for working (drawing) staple lengths of 1¼″ to 2½″ — 32 mm to 64 mm — but later proved of value in working 1″ staple as well. It may be applied to existing frames of the cotton system.

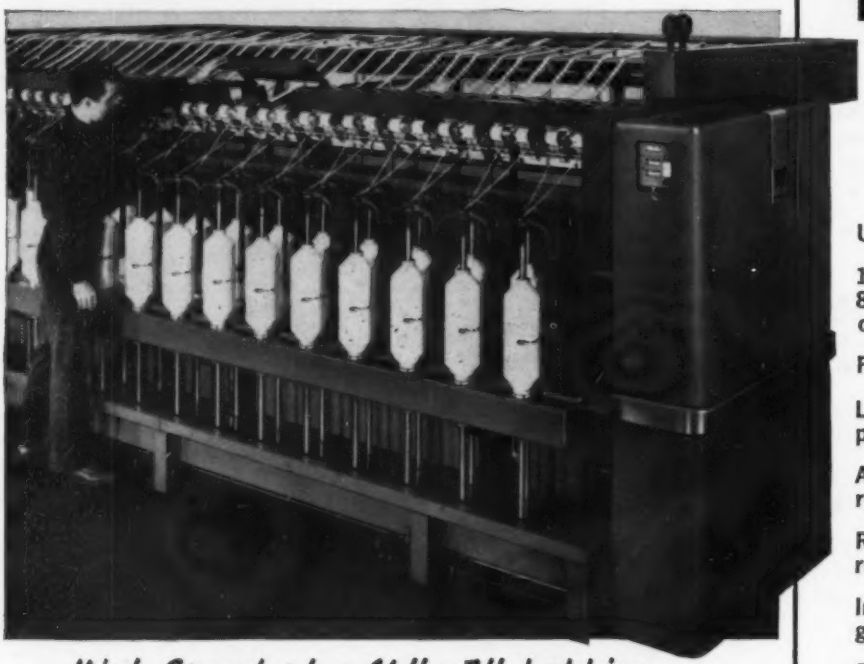
What It Does to Yarn. It may be used as a preparation for combing as well as for normal drawing of carded yarn. Either way, it produces greater parallelization than results from conventional carding or from combing after conventional drawing. This it accomplishes by straightening and laying in parallel order many hooks that normally slip through and into the sliver. It may break such hooks off and set them free to fly off, but either way it produces better yarns, better spinning performance, and better-looking and stronger fabrics. Three drawings are strongly recommended.

It smooths out blends by breaking up aggregates of any one kind of fiber, and it usually gives a five- or six-per-cent increase in yarn strength. However, it will in no way offset or correct for poor carding. Specifically, it has:

1. Improved the appearance of 102s mule-spun yarn, reduced the spinning breaks in a 5-to-1 ratio, improved winding breaks from 17.8 to 9.4 for the same unit of length.

2. Cleaned up some 92s yarn so well a cheaper blend could be used.

New WHITIN Model P SHATTERS Roving Production Records



High Speed-plus 14" x 7" bobbins make dramatic increases possible

Trapped in today's cost/price squeeze? Only two things will help — increase your production and cut operating costs — and the great new Whitin Model P Roving Frame does both for you.

The basis of its enormous output is its capacity to build giant 14" x 7" packages carrying 88 oz. or more at very high speeds to give you the production increases you've probably dreamed about, 20%, 30% — even 50% or more.

And these same giant packages also reduce both the frequency of doffing on the roving and of creeling on the spinning, resulting in significant savings in both places.

Just check the list of features, and we're sure you will want to discuss the Model P in more detail with your Whitin Sales Representative.

the Model P offers:

- Up to 1200 rpm flyer speed
- 14" x 7" bobbins carrying 88-100 oz. net, depending on cotton and Hank Roving
- Full length 96 spindle frame
- Less floor space required per pound produced
- Antifriction top and bottom rolls — 3 lines
- Reduced doffing time on roving operation
- Improved and simplified gearing
- Doffs over a bale (500 lbs.) at a time
- Uniform-pressure spring weighting on rails
- Reduced creeling time on spinning
- Permanent mold, aluminum alloy flyers—easily threaded
- Hand and foot operated off-on switches
- Modern broken end and waste collection systems
- Variable speed pulley drive

Why not call him today?

WHITIN MACHINE WORKS

WHITINSVILLE • MASSACHUSETTS

CHARLOTTE, N. C. GREENSBORO, N. C. ATLANTA, GA. SPARTANBURG, S. C.

The best way to better yarns

For further information use Handy Return Card, Page 173

3. All else being equal, upped drawing speeds without sacrificing quality.

4. Saved up to two per cent on comber noil waste.

5. Reduced fly from dirty* blends enough to extend cleaning period from 20 minutes to one doff.

6. Reduced slubs in one instance enough to remove the need for fabric burling and mending — this was on a long staple.

Description. Top rollers are used on front, second, and back lines as usual. Roll weighting, based on cloth and leather covering, should be forty pounds, applied. The porcupine rolls are driven from the back roll through a suitable wide carrier gear.

Caps may be used (on every other stand has been all right) to hold the porcupine roll down. Transparent plastic covers can be used over the porcupine sections, resting on the caps.

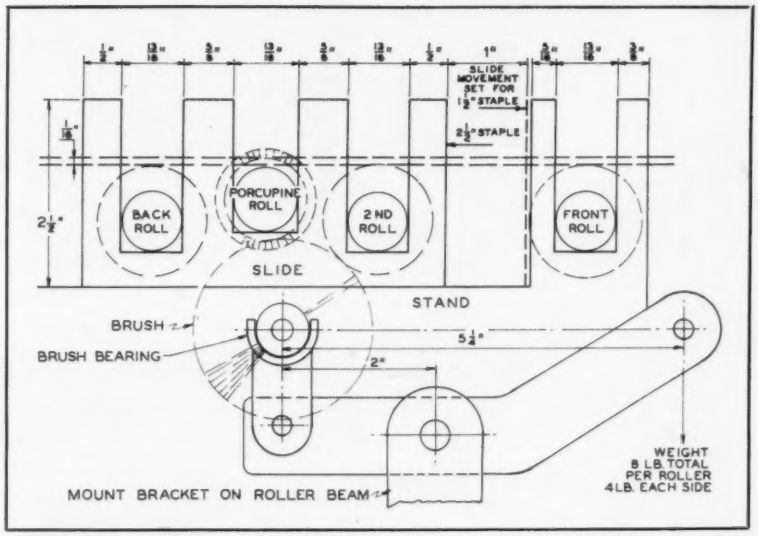
In the conversions made, the existing roller slides have been used, but one small set-up has had a special slide made to carry the back, porcupine, and second rollers.

In new work, the common slide would be an advantage in simplifying setting the front and second rollers. It could be also made to carry a full cover for brush mounting. Then all resetting would be done by one adjustment. If a common slide were adopted, it could be cut 7/8" at the journal for the porcupine shaft.

This would save turning necks on the shaft, but arrangements would have to be made to control lateral movements of the porcupine shaft. Clearer arrangement is the normal revolving endless type for the top rollers. A stationary "bob weighted" clearer under front bottom roller keeps that member clean. The second bottom roller and porcupine are kept clean by a rotary and agitating circular brush, frictionally driven by the bottom second roll and porcupine. It is held in place by weights or by spring pressure.

(Continued next month)

*Descriptive of blends containing "very" strong and "very" weak fibers and the great quantity of fly given off through breakage in the weaker element.



Schematic of roll positions. Brush, driven by flutes on second roll, flicks waste from base of pins of porcupine roll. Pilot frame dimensions given here are varied to suit.

"Who can make it" or "Where did the boss go?"

THE EDITORS:

We have a problem. The boss leaves (too) frequently and never thinks it necessary to say where he is going. Usually a minute after he departs, his phone rings (autocall by passed) and we are thus made to feel stupid because of our ignorance of his whereabouts.

Why not a desk "busybody" in the form of a small gadget, phone base size, with four or five depressing keys and one to clear the board? Tabs could be made to suit the activity, as "office" or "store" or "gone for the day," etc.

It could be mechanical or electrical, for either system would allow the boss to depress the key denoting his expected rendezvous. And we could give a sensible answer now and then.

Is anything like this on the market? If not, can you advise me how to start the promotion?

It shouldn't cost too much and would be ideal for suppliers to give customers, possibly at a cost lower than some of the gifts they now pass on. I welcome any advice or criticisms.

CONTRIBUTOR NO. 1336

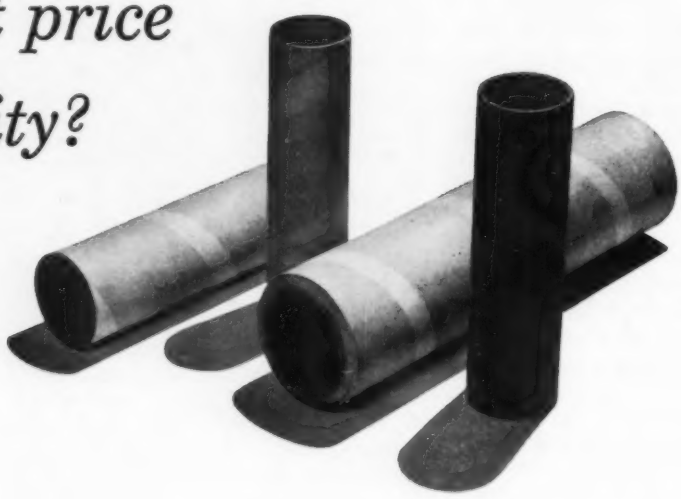
A technique for changing pilot valves

Automatic control of steam and liquids is efficiently accomplished by regulating valves. The main valve is placed in the main line as shown in *picture 1*. This valve is normally closed. The seat is opened to permit regulated flow by the action of the pilot valve which, in the arrangement shown in picture 1, is governed by pressure. In spite of strainers, dirt traps and other preventive measures, pilot valves need cleaning and inspection.

In the group of illustrations is shown the correct technique and ease of removing one pilot valve and replacing it with a new or cleaned one. Notice that the regulator station was well-designed for

Sonoco Paper Tubes...

what price quality?



Dependable, uniform performance is the extra quality delivered by Sonoco with every order of textile paper tubes and this quality works to your advantage. Your real *savings* come after your initial cost because Sonoco tubes provide trouble-free foundations for perfect packages.

Sonoco produces all types of spiral, convolute and parallel tubes. Supplying customers with the *right* type of yarn carrier, at reasonable cost, is achieved through advanced processes which permit the manufacture of paper tubes with unusual properties. Qualified Sonoco sales engineers are ready to assist you with economical solutions to your particular yarn carrier problems.

Technical service of this type is an added benefit when you buy from Sonoco. *Only Sonoco,* in its field, is in a position to keep pace with the textile industry through research and product development. Sonoco's more than 60 years' experience can benefit you.

SONOCO

Products for Textiles

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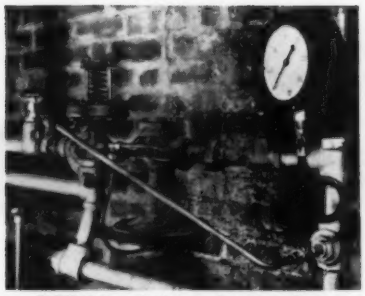
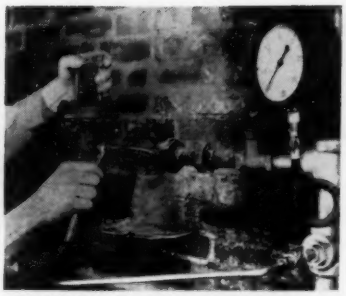
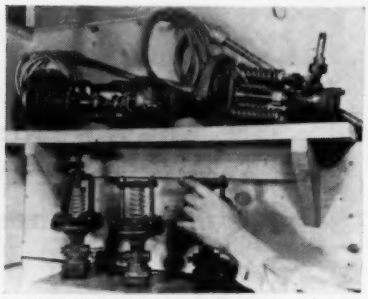


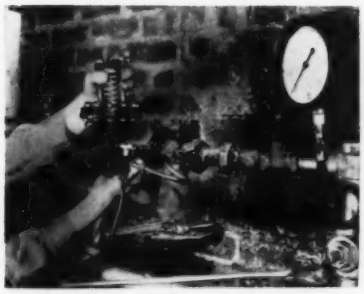
PICTURE 1. Isolate pilot from flow.



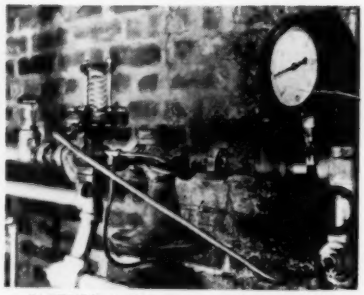
PICTURE 2. Disconnect control piping.



PICTURE 3. Select replacement pilot.



PICTURE 4. Install, reconnect piping.



PICTURE 5. Pressure on, pilot at work.

maintenance. Both the main and pilot valves are accessible and the steam-fitter is not hampered by interfering pipes. Gate valves isolate the pilot and main valves from the flow.

The pilot valve is not enclosed in the housing of the main valve but is external and accessible. The main valve remains untouched. The first step, then, is to close the gate valves isolating the pilot.

The next step is to disconnect the control piping from the pilot, *Picture* 2.

The third step is to obtain a replacement valve, either new or previously cleaned, from the store room shelf, *Picture* 3.

Usually an identical pilot will be replaced. However, should it be necessary, because of changes in the system, to change operating pressure of the main valve, a different valve can be selected and installed in place of the old pilot.

Pilots are interchangeable on the main valve. Or, if it is necessary to regulate flow according to temperature, a temperature pilot with thermostat, such as are shown on top shelf in Picture 3, can be installed. Temperature pilots are interchangeable on the main valve also.

Usually, without changes in control piping, flow through the main valve can be controlled as to both pressure and temperature without disturbing the main valve. The replacement pilot, either identical or for regulation at a different pressure or for temperature regulation or both, is installed by connecting the control piping, *Picture* 4. The system is ready for operation in a matter of minutes, *Picture* 5. The old pilot can be cleaned and inspected at leisure.

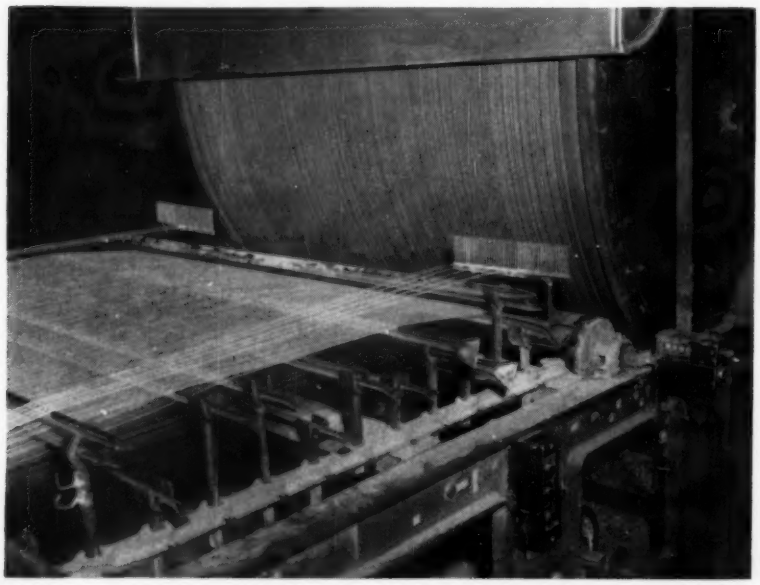
SPENCE ENGINEERING CO., INC.

Easy way to slash selvage ends

THE EDITORS:

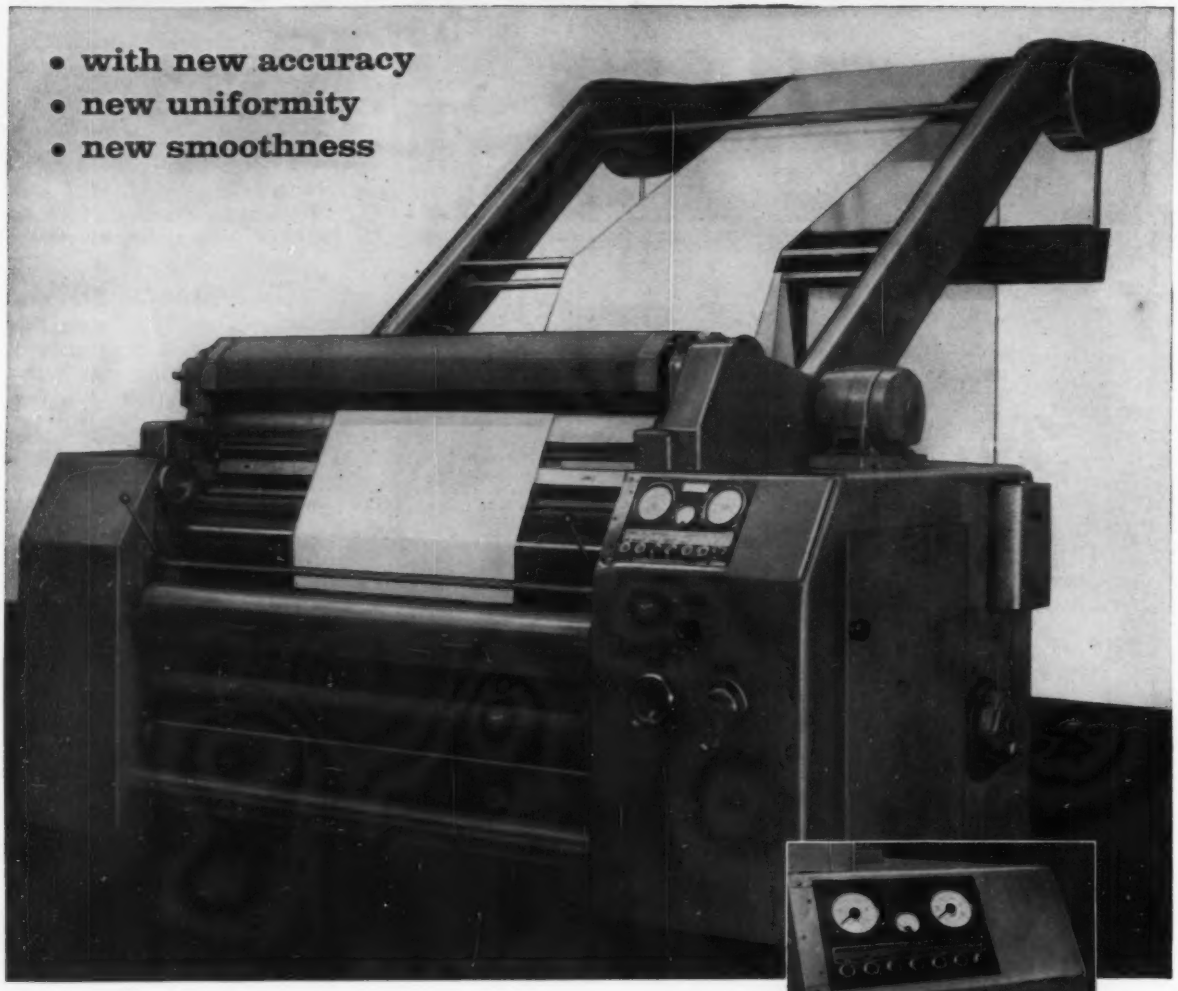
Selvage ends often stick and twist at the slasher, especially if these ends are of a different count than the rest of the warp. One way to keep these selvage ends straight is to run them through a comb mounted in front of the drying cylinder. These ends can be run over the split rods but should be run through the regular comb at the front of the slasher in the usual manner.

CONTRIBUTOR NO. 1330



THE FRANKLIN SHEAR-

- with new accuracy
- new uniformity
- new smoothness



Put a whole new face on woolens, worsteds, synthetics, knitgoods and high pile fabrics with this new Gessner finishing machine.

Revolver and knife, anchored to the main frame, reduce vibration and chatter, to produce a remarkably accurate and even cut — every inch of it uniform and smooth. We hope you will want to know more about the Franklin Shear.

DAVID GESSNER CO.

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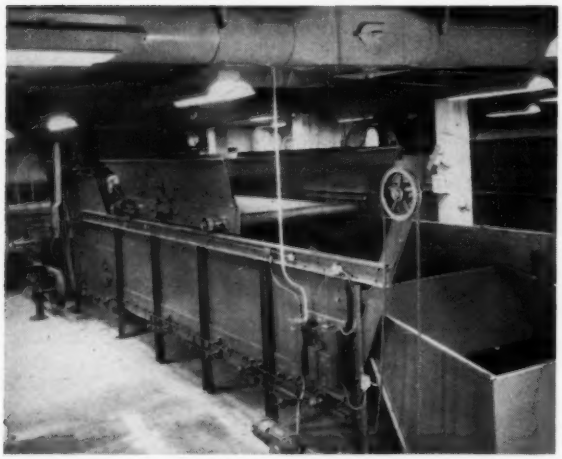
1762 West Vernon Ave., Los Angeles, California

Canadian Representative:
W. J. Westaway,
Montreal, Quebec; Hamilton, Ontario

For further information use Handy Return Card, Page 173

NEW PRODUCT PARADE

Please note: Claims made in all of these announcements of new developments are of necessity based upon information furnished by the respective suppliers.—The Editors.



How to get accurate wool mill blends consistently

A better stock for carding is economically produced with the new Davis & Furber Unitized Opening and Blending System for woolen and worsted system mills. Basic components of the system are: (1) power operated weigh bucket and platform scale; (2) Type 565 Harwood Bramwell Feeder with a large-capacity reserve hopper and, for secondary processing, a reciprocal-motion distributing conveyor; (3) the new D&F 12-bar mixing picker or Fiber Blending Opener; (4) blower; (5) D&F ceiling condenser; (6) Vortex automatic stock oiler.

Operations performed are: (1) proportioning stock components by exact weight; (2) tumbling of components for initial mixing; (3) intermixing of fibers of all components; (4) picking of mixed fibers for opening; (5) removing dust and other foreign matter; (6) sandwiching stock in layers; (7) piling of opened and blended stock; (8) moving stock between units to bins or baling machines.

Blending is accurate and consistent because the complete operation is automatic. Efficiency is high since handling requirements are minimum. Adjustable processing may be obtained in opening, mixing, and blending because control points of several types can be provided as required. Operating cost is reduced as extra binning, storing, and handling are eliminated. Operating capacity is flexible since several basic arrangements and variations are available. Lot changing and cleaning are simplified as stock is processed dry through equipment which is of self-cleaning design. Since the equipment is all on one level, accessibility and maintenance are easy.

A predetermined amount of each component of a blend is manually placed in the electrically operated weigh bucket on the reserve hopper and automatically dumped into the hopper. As the reserve hopper's slowly moving long bottom apron becomes filled with continuous, proportioned dumps, the stock tumbles onto a much faster moving short bottom apron in the feeder's working hopper for an initial mixing. The spike apron cuts across the face of this mass of stock and rapidly lifts away a flow of still more thoroughly mixed fibers, delivering them to the picker or Fiber Blending Opener. If only one run of the stock through the line is required, it is sent through the oiler and thence to a bin or baler. If two or more runs are desired, the stock can be conveyed from the picker by pipe and blower to a ceiling condenser over the original reserve hopper or a second line reserve hopper for subsequent runs to improve opening and blending. The condenser drops the cleaned stock onto the distributing conveyor assembly which travels forward and backward depositing the stock in layers on the reserve hopper's long bottom apron. The stock again goes through the feeder and picker and finally to the oiler before storage in a bin or baling.

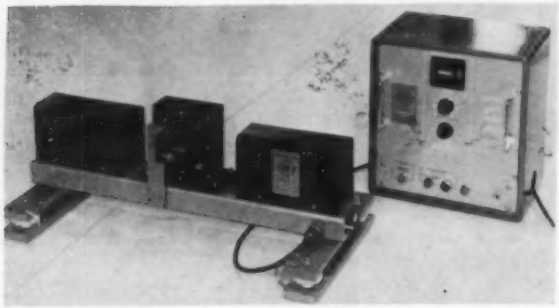
Davis & Furber Machine Co., North Andover, Mass.

Do you want more data? Write ◂ or use card on page 173; list J-101

Yarn defects can't hide from this inspector

A two-dimensional viewer attachment now available for the Lindly Thread and Line Inspector incorporates an optical system with four prisms which causes the thread to be examined simultaneously from two sides, so that imperfections cannot be obscured. Hence, it is possible with this equipment to automatically inspect yarn, thread, fishing line, etc., at speeds greater than 400 ypm with almost the same accuracy as that provided by visual inspection.

The optical system of the viewer splits the single beam of light from the source into two halves. These two new beams are then made to intersect each other at 90° in the center of the viewing fixture on the axis of the



Lindly Thread and Line Inspector.

material being examined. Finally, the two beams are recombined to form a single one which enters the photoelectric unit. Thus, regardless of the position of the defect as it passes through the fixture, it will affect the light in one or both beams. This creates an electrical impulse which is put to use in the electronic control unit for counting or operating a stop motion.

Foster Machine Co., Westfield, Mass.

Do you want more data? Write ◂ or use card on page 173; list J-102

Compact automatic checkweigher

A new Selectrol automatic, high-speed checkweigher is specially designed for installations where floor space is at a premium. Over-all dimensions of the Model 1205-S are only 20" deep and 22" long, with an adjustable height of 35" to 40". The checkweigher will automatically weigh, classify, and separate packages by correct weight, over weight, and under weight at speeds up to 200 per minute depending on the accuracy requirements and product handling characteristics. Standard models will weigh packages in a range up to 12 ounces.

The Exact Weight Scale Co., 541 E. Town St., Columbus 15, Ohio.

Do you want more data? Write ◂ or use card on page 173; list J-103

Racks make more warehouse space available

A new group of AIM Brand "drive-in" and "drive-thru" racks for high-density storage of palletized items allows floor space to be completely covered by storage racks, even space normally allotted for internal aisles if desired. Fork lift trucks and workers, however, have full access to storage items.

The line is made up of standard, pre-fabricated components which are designed for custom installation to meet the exact storage requirements of each warehouse application. In "drive-thru" installations all support frames are arranged in parallel rows so that fork lift trucks can drive through any empty storage bay. "Drive-in" installations are arranged with cross-rows of support frames or bracing which prevent complete passage through storage bays but allow lift trucks to place items into storage by driving in and backing out.

Acme Steel Co., Fabricated Materials Division, 135th St. and Perry Ave., Chicago 27, Ill.

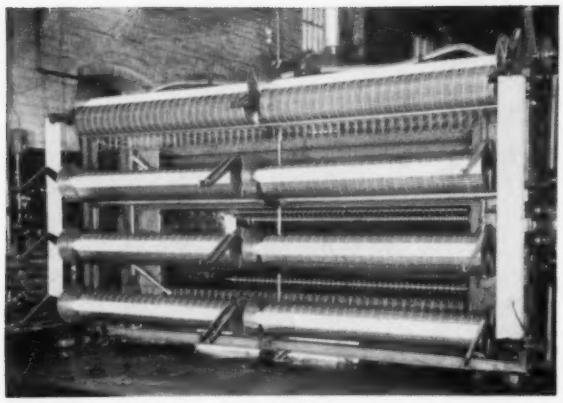
Do you want more data? Write ◂ or use card on page 173; list J-104

Around the textile mills with **SHAMROCK**

Report on how some famous products are being put to many uses. A versatile, lightweight Shamrock Truck, of course, can handle quite a few different types of jobs around a mill. One such is that shown here, to speed up movement of cones from one department to another in Calloway Mills, LaGrange, Ga.

In the manufacture of all Shamrock Trucks, Hampers and Canvas Baskets, a top-grade, extra-heavy duck is used. This results in a container of exceptional lightness, but highly resistant both to normal wear and even hard usage. Shamrock equipment, whether standard design or "made to your order" will last longer—lower overhead. For full information about the Shamrock line, and location of nearest sales office, write

MEESE INC., MADISON, INDIANA



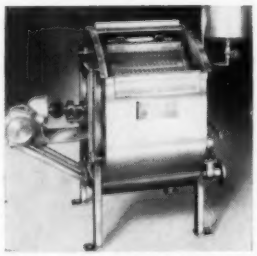
Condenser attachment helps carder and spinner

The Double Line Traversing Spool Drum Stand recently introduced for use on Whitin Model P4D tape condensers offers these advantages: (1) greater yardage can be wound into individual roulettes or cheeses; (2) provides for double line of drums having a total width which exceeds the width of the condenser; (3) eliminates possibility of producing uneven yarn due to side guide strain, as the roving guide rods are stationary; (4) shorter spools with fewer but larger cheeses are more easily handled in doffing and creeling.

Whitin Machine Works, Whitinsville, Mass.

Do you want more data? Write ◂ or use card on page 173; list J-105

Rotary dyer doubles as washer for knit goods



The Turbo Model RD-60 Rotary Dyeing Machine has been redesigned for both dyeing and washing of hosiery and sweaters. A variable drive arrangement, mounted outside the tank, permits operation at speeds from 6 to 30 rpm. The stainless steel machine is made in capacities from 4 to 300 lb per batch. Because reversing is done electrically, operation is extremely quiet.

Turbo Machine Co., Lansdale, Pa.

Do you want more data? Write ◂ or use card on page 173; list J-106

Improved full-fashioned hosiery knitting machine

New "Reading" 200 full-fashioned knitting machines are equipped with a splicing attachment that operates at 115 courses per minute. A fully automatic thread puller and separator, motor positioned, is another feature. A new starter places the coulier motion in action after narrowing or lace forming, with a minimum of shock to the mechanism involved. Production of a 60 gauge, 30-section machine is 22 dozen pairs per 8-hour shift, 25 dozen with a 34-section machine, and 28 dozen with the 38-section machine.

Textile Machine Works, Reading, Pa.

Do you want more data? Write ◂ or use card on page 173; list J-107

MAIER-FLÜGEL

TEXTILE SUPPLIES W D USED MACHINERY

Now You Can Get 30-40% Weight Increase With The Same Package Size!!!

The new Maier F-Type Flyer makes it possible! This new flyer compresses the roving and winds it without friction on the bobbin, enabling you to get from 30% to 40% weight increase with the same package size . . . and equal or better roving quality!

With the Maier F-Type Flyer, you get maximum efficiency in the processing of any type of cotton, wool or synthetic fiber, because you get longer operation of the flyer per doff . . . less ends down on roving frames and spinning frame . . . less creeling on spinning frames. And the roller needs absolutely no maintenance.

F-Type Flyers are made to fit all makes of roving frames and are adaptable to any spindle spacing.

Call your Watson & Desmond representative today. He will measure your frame, recommend the widest possible flyer and give you an estimate of the increased weight of roving you can obtain with the new Maier F-Type Flyer.

Watson & Desmond INCORPORATED

P. O. Box 1954 • Charlotte, N. C.

The Number Is...EDison 3-6154

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UNiversity 5-8631

In West Point, Ga.
H. Dorsey Lanier
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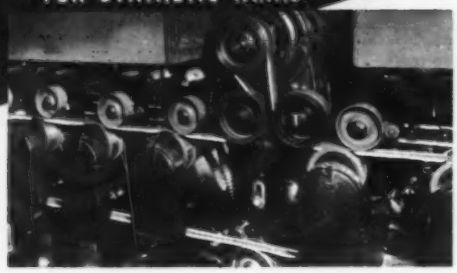
Phone 642-3363

In Greenville, S. C.
Ray A. Norman
Box 779
CEdar 9-4279

TON-TEX SUPERFLEX
CONER BELTS
FOR SYNTHETIC YARNS



Made from new strength plies of special synthetic duck. Will maintain full rated spindle speeds. Thin...strong... flexible...no stretch problems...smooth operation.

Furnished endless to your size, or in roll stock for vulcanizing on your machines.

THE RUNNING MATE OF SUPERFLEX TWISTER BELTING

Write for Details

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GREENSBORO, N. C. 1910 E. Wendover Ave.
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Serving Industry Over a Quarter Century

NEW "LIGHTWEIGHT" PERALTA® MACHINE

with
Off-set Roll Arrangement
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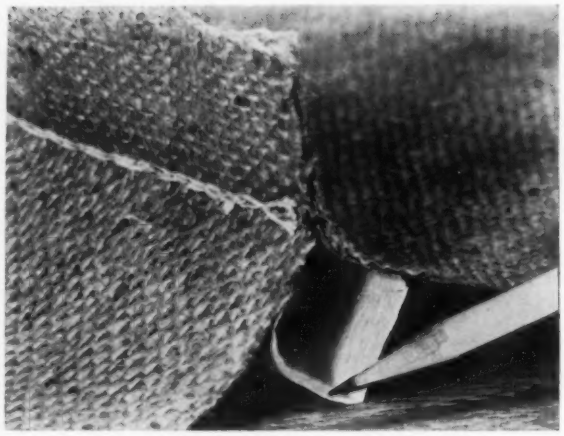
Main Street Jefferson, Mass. P.O. Box 25



Carpet cover keeps dirt, dust, and water out

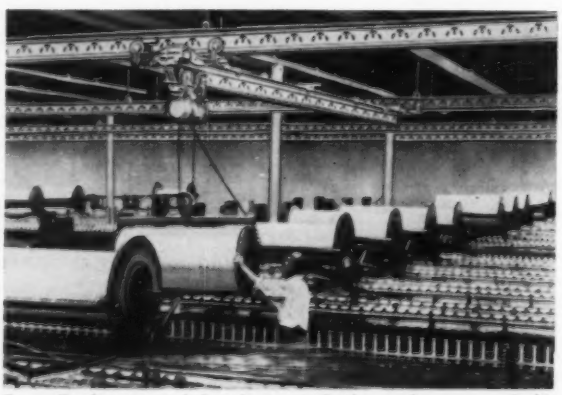
A new development in rug and carpet covers gives a greater degree of protection from dust and water during shipment and storage. The development is the addition of a polyethylene-coated kraft paper strip along the inner side of the seam of laminated-textile carpet covers. The water-resistant strip, which is folded and pasted into the seam, forms a flexible shield directly beneath the stitching. As the cover, known as the "B" Seam carpet cover, becomes taut when a carpet is inserted, the protective strip is automatically drawn flat under the stitching and acts as a barrier against dust, dirt, and water.

Bemis Bro. Bag Co., 408 Pine St., St. Louis 2, Mo.

Do you want more data? Write ☁ or use card on page 173; list J-108

Better track for overhead materials handling

Especially advantageous where distances between track supports are great is a new heavy-duty track for overhead materials handling service which is designed to withstand heavy, swinging, jerky loads, and provide a smooth, trouble-free road for materials movement. Called Traca Track, it is a compound section consisting of a steel flange and web and an especially rolled high carbon alloy steel rail, welded continuously from end to end to form a combined section free of stress concentrations. This construction assures longer life and less deflection (not to exceed 1/450th of the span) to greatly ease the



Traca Tracks are used for the crane bridge and runways of this twister room beam handling system.

For further information use Handy Return Card, Page 173

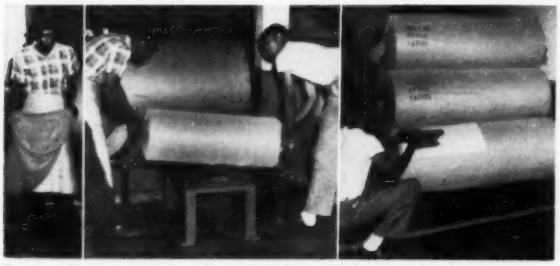
load propulsion effort required. Available in depths from 8" to 20" and lengths up to 60', the track can be used for new or existing hand-powered or electrified installations and may be connected to track switches.

Cleveland Tramrail Div., The Cleveland Crane & Engineering Co., Wickliffe, Ohio.

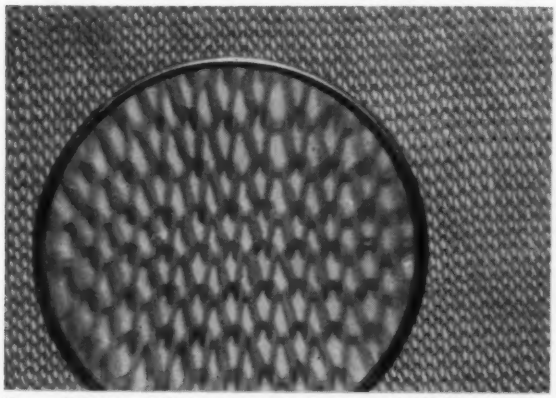
Do you want more data? Write ◆ or use card on page 173; list J-109

Neater, faster, safer way to package roll goods

A tubular knitted fabric made of wet strength kraft paper yarns offers textile manufacturers a number of advantages in the packaging of all rolled goods (including rugs and carpets), bolts of cloth, etc., for shipment. Called DurLap, the toast-brown fabric is lintfree, odorless, oil-free, water repellent, and mildew resistant. Compared with conventional woven fabrics used for this purpose, the material is more resilient, better looking, just as strong, and weighs about the same.



To use DurLap tubular knitted fabric (left photo), simply slip it over the roll of cloth, pull tight, and wire both ends (center). Neat, easily stencilled packages (right) are produced.



View of DurLap under magnifying glass shows knitted construction which makes it cling tightly and neatly to every shape.

Since the fabric is smooth and dry, it takes and holds stenciling better. Because of the knitted construction, the fabric fits easily to contours and produces a neat package; its elasticity makes it easily adaptable to any packaging technique.

The tubing comes in a variety of widths ranging from 30" through 54" to cover rolls from 8" to 24" in diameter. On large orders the fabric can be furnished in the customer's colors or stripes for ready identification.

Fulton Cotton Mills, Inc., P. O. Box 1726, Atlanta 1, Ga.

Do you want more data? Write ◆ or use card on page 173; list J-110

How to prevent break-outs at the slasher

A simple and economical attachment which may be quickly and easily installed on any slasher prevents break-outs from tangles and mat-ups. The increase in

Introducing

SATIN FINISH*

a new ring finish with all the Diamond Finish qualities of hardness, tolerance and roundness ...plus attractive cost savings ◆ details on request

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WHITINSVILLE (MASS.) SPINNING RING CO.

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FIBER CONTROLS

— UNIFEEDER —

CARD-FEED FOR WOOL CARDS, GARNETTS, SYNTHETIC and COTTON PICKERS

An accurate automatic **stock metering unit** that will handle **any staple fiber, natural** or **synthetic.**

This precise unit is available in 48 inch, 60, 72 & 84 inch widths. Dump to dump accuracy is less than 2½% total variation. This metering accuracy indicates the degree of opening accomplished between the comb and the apron pins. Rejected production is negligible. Simplicity of design makes this system extremely economical to operate and maintain.

Using this equipment, the result is a mat of stock, **uniform in weight and density** consistently to the feed rolls.

IT IMPROVES YOUR PRODUCT . . .
FACILITATES CONSTANT QUALITY AND
COST CONTROL . . .
REDUCES WASTE .

For more complete details of this equipment call or write:

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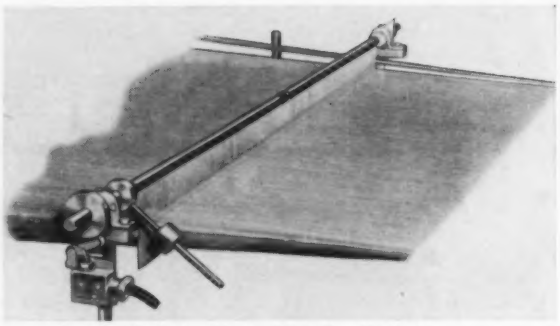
FIBER CONTROLS CORPORATION
BOX 1358 GASTONIA, NORTH CAROLINA



Stehedco Slasher Break Out Control.

production made possible with the unit, which is known as the Stehedco Slasher Break-Out Control, will soon amortize the investment.

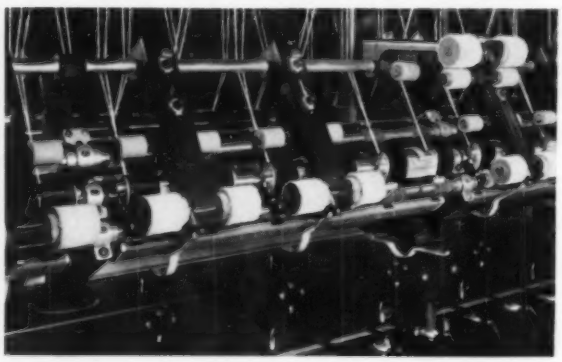
When a tangle or snarl reaches the inverted comb, which is mounted above the yarn sheets, the comb is pivoted forward, activating a switch that automatically sets the slasher controls to slow speed. The comb is counterbalanced to offset the natural friction of the yarn sheets, and it reacts only when an unnatural drag is exerted against it.

Steel Heddle Mfg. Co., Philadelphia 32, Pa.

Do you want more data? Write ◂ or use card on page 173; list J-111

Get better yarn from older Gwaltney type frames

A new double-apron spinning changeover is available for converting Gwaltney type spinning frames equipped with the original single apron SG-1 or Shaw System to the Duo-Roth System. Designated as the SG-3D Changeover, it provides more effective control of the fibers in the draft zone and produces yarn of better quality.



The new drafting element incorporates all of the antifriction features of the present SG-3 Duo-Roth system. The angle of the roll stand in respect to the horizontal remains at 60° and utilizes the original Gwaltney top arm weighting, reducing the number of parts required for most changeovers. The changeover is therefore relatively simple to install and requires a minimum of downtime.

Saco-Lowell Shops, Drawer 2327, Greenville, S. C.

Do you want more data? Write ◂ or use card on page 173; list J-112

Traveler hardness tester

The West Point Traveler Hardness Tester affords a means of comparing one lot of travelers against another as far as average hardness and range of hardness are

For further information use Handy Return Card, Page 173

concerned. The unit is designed to measure the distance the jaws open on a dial indicator and this reading will correspond to the traveler opening at the time the traveler breaks. The average opening of a number of travelers is a direct indication of the hardness of the traveler.

Custom Scientific Instruments, Inc., 541 Devon St., Kearny, N. J.

Do you want more data? Write ◂ or use card on page 173; list J-113

Sweeps floors faster, cleaner, with less dust

Cleaner sweeping and better dust control are advantages of an improved 40"-path vacuumized sweeper which is designed for sweeping narrow aisles. Chief feature of the new model (Tennant 53) is a fully-enclosed 5100 sq in. dust filter with 64% more filter area than the original unit. It filters the fan driven, dust-laden airstream through a series of filter envelopes. A few turns of a crank-lever mechanically cleans the filter; accumulated dust drops down into an enclosed pullout tray.

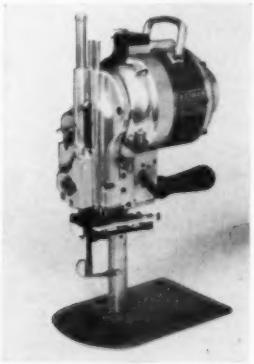
Available in 7 hp gas or LP-gas models, the sweeper travels at speeds to 5 mph, reverses instantly, has a 64" turning radius, and has a 28" main brush and a 19" rotating side brush (for flush-with-wall sweeping).

G. H. Tennant Co., 721 North Lilac Dr., Minneapolis 22, Minn.

Do you want more data? Write ◂ or use card on page 173; list J-114

Two-speed cloth cutting machine is time-saver

A combination high-and-low speed, straight-knife cutting machine recently placed on the market enables garment manufacturers (1) to cut both fusable synthetics and natural fabrics with the one machine and (2) to cut



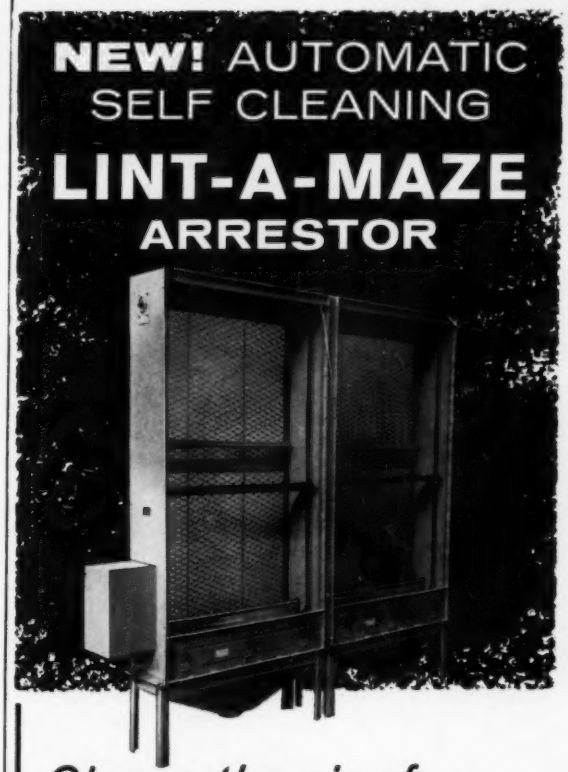
higher lays of certain synthetics and blends. By simply flicking a switch on the machine, which is designated the Eastman Model 623DS Dual Speed Knife Saver, the speed is instantly changed to either 1800 rpm or 3600 rpm.

Eastman Machine Co., 779 Washington St., Buffalo 3, N. Y.

Do you want more data? Write ◂ or use card on page 173; list J-115

Packaged multiple-motor braking control

Easy installation, less maintenance, and lower initial cost are advantages of the new Westinghouse multiple-motor "DynAC" braking control for cloth inspection



Cleans the air of...

* LINT
* CHAFF
* FIBROUS MATERIAL

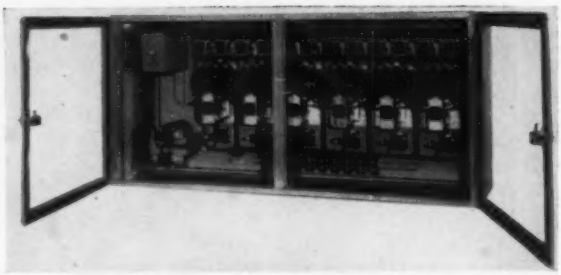
AIR-MAZE LINT-A-MAZE FILTERS are specially designed to provide 98% or more efficiency in removing heavy concentrations of lint, chaff, leather cuttings and similar materials from the air. Brushes mounted on a chain carrier continually sweep and automatically clean the collector screens. Collected material is deposited in a hopper for reprocessing or sale. Lint-A-Maze filters offer these important advantages:

- Low initial cost . . . low operating cost
- Require less than 50% of the space normally needed
- Virtually eliminate maintenance – no rolls or blankets to replace, no washing or cleaning
- Handle wet or dry impurities
- Can be installed in any recirculating air opening, ventilating or air-conditioning system
- Available for airflow requirements from 7,000 to 150,000 CFM, can handle air velocities from 250 to 1900 FPM.

FREE! For additional information write for Bulletin No. 150.

AIR-MAZE DIVISION
CLEVELAND 28, OHIO
ROCKWELL-STANDARD CORPORATION

BE SURE YOU SPECIFY—
ON YOUR NEW FRAMES
PNEUMAFIL
Only PNEUMAFIL
gives you exclusive "air flow" suction to "swallow" more air, capture more lint, enable faster front roll speeds. Special ring diffusor fan gives widest range of operation at peak efficiency. Choice of three discharge arrangements.
plus
DELTAFLUTE
A powerful new "lap fighter." Unique shape allows closer flute positioning under front roll. Shorter, wider orifice concentrates air stream at point of maximum lint generation for remarkably good cleaning.
plus
DUFLEX SUSPENSION
Instant and effortless two-position suspension of flutes permits operator to work around rolls with both hands. Eliminates danger of scratched orifices which cause lint accumulation.
PNEUMAFIL CORPORATION • CHARLOTTE 8, N. C.



Multiplemotor DynAC braking control.

frames, looms, warpers, and spinning frames. The packaged unit combines all starting and electrical braking functions of several motors within one enclosure (a wall-mounted cabinet) and provides a complete d-c electrical braking package for a-c motors. It is available in ratings up to 100 hp, 220 volts and 200 hp, 440 volts.

Westinghouse Electric Corp., P. O. Box 2099, Pittsburgh 30, Pa.

Do you want more data? Write ◆ or use card on page 173; list J-116

Kits to improve performance of weighing feeders

Two new conversion kits are designed to improve the performance and reduce downtime of all types of weighing feeds.

One, known as the Aluminum Weigh Arm and Ball Bearing Suspension Unit and Damper Control, replaces the entire weigh arm and spring steel suspension strips previously furnished with Hunter feeds. Its weighing accuracy remains the same, while eliminating all small disc counterweights. The scale is graduated from 8 ounces through 32 ounces.

The other unit is the Weigh Pan Air Cylinder Conversion Kit. It can be used to replace rotary electrical solenoids and the old style air cylinder that required a spring for returning the doors to the normal closed position. All necessary parts, such as pressure regulator, gauge, fittings, air solenoid, air cylinder, and mounting brackets are furnished, along with a set of installation blueprints. The new air cylinder performs better than the rotary solenoid and old style air cylinder previously used, and requires less maintenance.

James Hunter, Inc., Mauldin, S. C.

Do you want more data? Write ◆ or use card on page 173; list J-117

Improved full-fashioned outerwear knitter

New features of the "Reading" full-fashioned outerwear knitting machine are: Bijur automatic oiling system; semi-automatic rib transfer attachment which reduces downtime for transferring ribs; Duo Draw-Off attachment which eliminates downtime for draw-off bar hook-up and removing finished work; simplified automatic narrowing heads (independent spindle controls).

Textile Machine Works, Reading, Pa.

Do you want more data? Write ◆ or use card on page 173; list J-118

Textured Verel filament yarn for carpeting

Textured continuous filament Verel modacrylic yarn for carpeting is being offered initially in 2700 denier. Its

For further information use Handy Return Card, Page 173

qualities include excellent bulk and cover, exceptional clarity and fastness of color, and outstanding wear and general performance. The yarn, which is available in natural and solution-dyed forms, is also lightly flame resistant, non-allergenic, and has high resistance to moths and mildew.

It is expected that the yarn will have its greatest application in loop pile carpeting in tweed types and muted tone-on-tone effects.

Eastman Chemical Products, Inc., P. O. Box 431, Kingsport, Tenn.

Do you want more data? Write ☁ or use card on page 173; list J-119

Acid-dyeable Orlon staple

Commercial availability of an acid-dyeable form of Orlon acrylic fiber has been announced. Called Orlon Type 44, it was engineered to complement conventional basic-dyeable Orlon Type 42. Multi-color styling effects such as stripes, bars, heathers, argyles, etc., are possible with single bath piece dyeing techniques when the two types are used in the same yarn or fabric. Initial whiteness of the Orlon Type 44 fiber, which is available in 3- and 6-denier forms, results in clear, bright shades in cross-color effects, and there is excellent color stability to heat and use exposure.

Blends of the two types of fibers are expected to gain rapid acceptance in knitwear, particularly in sweaters, socks, and jersey fabrics; also in woven fabrics for lightweight coats, sport shirts, suits, and dresses is expected.

E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del.

Do you want more data? Write ☁ or use card on page 173; list J-120

Textured acetate yarn for bedspreads

Celacrimp, a new filament textured acetate yarn, has been specially engineered to expand the styling potential and performance of the bedspread field. When combined with cotton, this new yarn is especially successful in producing an heirloom bedspread effect that creates a series of tone-on-tone colorings from the whole gamut of combination color cross-dyeings that previously have been unobtainable with other fiber combinations.

Spreads woven with Celacrimp retain their original appearance after repeated washings. Also, the yarn minimizes the problem of linting, fuzzing, snagging, and pulling after launderings. Its lofty texture is resilient and tends to resist crushing.

Celanese Fibers Co., 522 Fifth Ave., New York 36, N. Y.

Do you want more data? Write ☁ or use card on page 173; list J-121

NEW! A CHOICE–

NYAF CENTER-SUSPENDED
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BOTTOM ROLL BEARING
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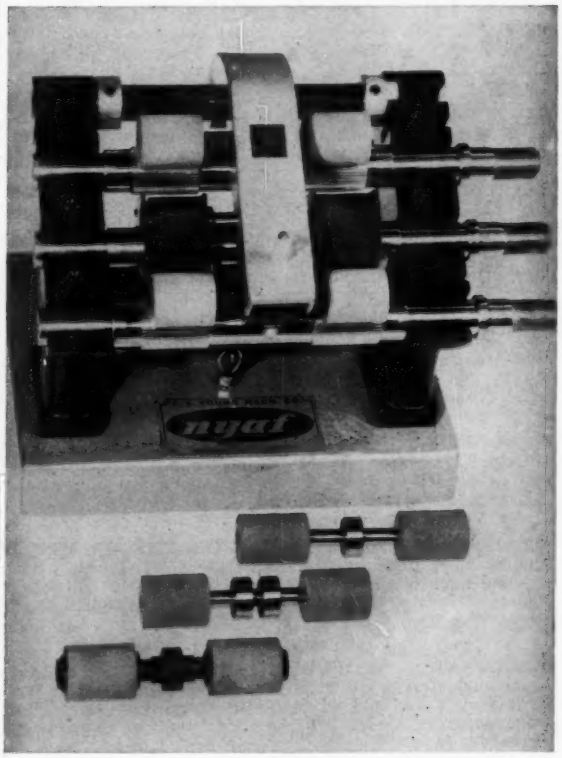

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FREE BOOKLETS

9-1 FREIGHT HANDLING TRUCKS — Brochure describes various freight handling trucks, including dimensions and photographs. Excel, Inc., Lee Avenue, Lincolnton, North Carolina.

9-2 POLYVINYL ACETATE—Comprehensive technical manual describes properties and uses of "Gelva", polyvinyl acetate. Shawinigan Resins Corporation, Department RH, Springfield 2, Massachusetts.

9-3 VARIABLE SPEED DRIVE—Booklet gives complete details on lube-free, integral variable speed drive. Sterling Electric Motors, Inc., 5401 Telegraph Road, Los Angeles 22, California.

9-4 SPRAY NOZZLES—Catalogs and bulletins on all types of spray nozzles and related equipment for textile mill application. Complete descriptive, dimensional and capacity information. Spraying Systems Company, 3272 Randolph Street, Bellwood, Illinois.

9-5 ELECTRIC DRYERS—Bulletin describes electric reactivated "Oriad" dryers, including dimensions and schematic diagrams. C. M. Kemp Manufacturing Company, 405 East Oliver Street, Baltimore 2, Maryland.

9-6 HEAT TREATMENT—Booklet describes scientific heat treating and metal finishing facilities available to the textile industry. Kluttz Machine & Foundry company, Gastonia, North Carolina.

9-7 BETTER THAN BURLAP — Booklet describes "Durlap", a wood cellulose knit tubing claimed to have many advantages over burlap. Fulton Cotton Mills, P. O. Box 1726, Atlanta 1, Georgia.

9-8 ELIMINATE LIGHTING PROBLEMS—Booklet describes how fading and tenderizing of fabrics from fluorescent lights can be reduced with Infropake Sleeves. Infropake Corporation of America, Greensboro, North Carolina.

9-9 OPENING AND BLENDING SYSTEM—Bulletin describes "Econo Unit-ized" opening and blending system, giving advantages, general description, and operating capacity. Davis & Furber Machine Company, North Andover, Massachusetts.

9-10 OVERSEAMING MACHINES—Data sheet describes versatile three thread overseaming machines for use on children's clothes, sweaters, girdles, etc. Merrow Machine Company, 28 Laurel Street, Hartford, Connecticut.

9-11 PROCESSING CHEMICALS — Catalog describes processing chemicals of Jacques Wolf & Company subsidiary, including enzymes for various textile desizing application. Catalog #JWL-100, Nopco Chemical Company, Literature Department, 60 Park Place, Newark 1, New Jersey.

9-12 TWO-DIMENSIONAL VIEWER — Literature describes new two-dimensional viewer for Lindly thread and line inspector. Foster Machine Company, Westfield, Massachusetts.

9-13 STEAM-DETERGENT CLEANING—Booklet is a concise, up-to-date compilation of the most modern methods and materials used in steam cleaning. Oakite Products, Inc., 119 Rector Street, New York 6, New York.

9-14 CREATIVE FRAMING—Booklet gives ideas and applications for creative framing of storage racks, shipping containers, tables, platforms, and other structures with slotted angle framing. Acme Steel Company, Fabricated Materials Division, 135th Street & Perry Avenue, Chicago 27, Illinois.

9-15 WRITING TUBES — Booklet describes writing tubes for marking textiles in greige mills, dye houses, and bleacheries. John P. Nissen, Jr., Company, Glenside, Pennsylvania.

9-16 LAP CONVEYOR—Report describes case history of a Rapistan conveyor used for transporting 60-pound laps from picking to carding. Rapistan-Keystone, Inc., 21750 West Eight Mile Road, Detroit 19, Michigan.

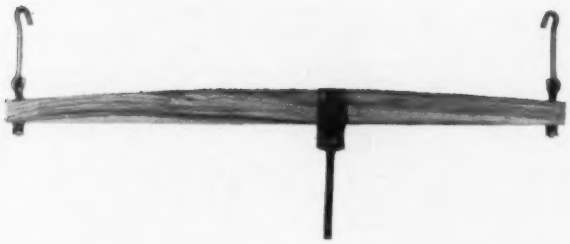
9-17 CROSSLINKING RESIN—Technical brochure describes self-reacting crosslinking resin latex, X-Link 2833, including properties, formulation, and applications. National Starch and Chemical Corporation, 750 Third Avenue, New York 17, New York.

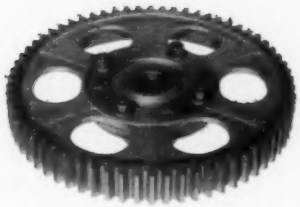
9-18 PNEUMATIC MANDREL—Brochure tells how one man can shaft up rolls easily, without roll and core damage. Perfection Tool and Manufacturing, Inc., Kalamazoo, Michigan.

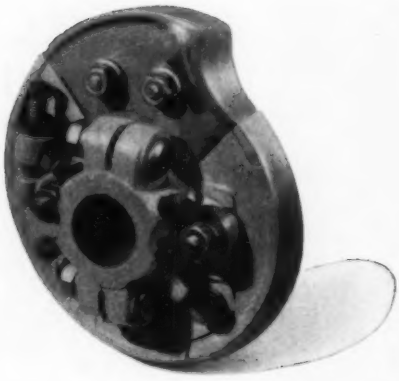
9-19 TEMPERATURE TRANSMITTER — Bulletin describes pneumatic temperature transmitter, featuring compact construction, force-balance operation, and automatic compensation. Bulletin 13-17C, Foxboro Company, Foxboro, Massachusetts.

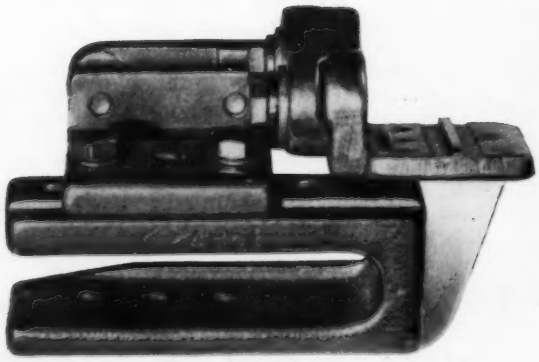
9-20 SELVEDGE HOLE DETECTOR—Booklet tells how automatic "detective" detects holes—spots defects and damages in selvedge. Crawford Manufacturing Company, 62 Water Street, New Brunswick, New Jersey.

9-21 BALING PRESSES—Illustrated bulletin describes the four basic types of hydraulic baling presses that compose the line of 50 standard models. Consolidated Baling Machine Company, Department 61TI, 197 Sixth Street, Brooklyn 15, New York.









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BOOKLETS

raw stock to roving

T-101 **LUMMUS PEPPER - SHAKER OPENER.** Gives complete details and photographs. Aldrich Machine Works, P. O. Box 760, Atlanta, Ga.

T-102 **STATIC ELIMINATION.** How to eliminate static safely and inexpensively. Simco Co., 920 Walnut St., Lansdale, Pa.

T-105 **VERSA - MATIC DRAWING FRAME.** Describes drafting elements, quality of sliver, roving and yarn possible. Saco-Lowell Shops, Textile Machinery Div., Easley, S. C.

T-106 **SARGENT OPENER.** Describes opener with rotary evener and stripper. C. G. Sargent's Sons Corp., Graniteville, Mass.

T-107 **FEATHERTOUCH DRAFTING.** How to get "highest production per frame at lowest cost." Ideal Industries, Inc., Bessemer City, N. C.

T-112 **ADVANTAGES OF ALDRICH PICKERS.** Good technical text, comprehensive pictures. Aldrich Machine Works, P. O. Box 750, Atlanta, Ga.

T-113 **NEW CONDENSER TAPE.** Describes Supr-O-Tape, an impregnated fabric condenser tape. Benjamin Booth Co., Allegheny Ave. & Janney St., Philadelphia 34, Pa.

T-119 **FIBER METER.** Automatic weighing and blending assures quality, holds variation to 1%. James Hunter, Inc., P. O. Box 298, Mauldin, S. C.

T-120 **PIN DRAFTERS.** Textile job report No. 21 tells how Warner & Swasey Pin Drafters help modify jute systems for carpet yarns. Warner & Swasey Co., 5701 Carnegie Ave., Cleveland 3, Ohio.

T-121 **UNIVERSAL CARD COILER.** Literature describes both head and base swivel for adjustment. Includes data on 90-day free trial. McDonough Power Equipment, Inc., McDonough, Ga.

T-122 **RECONDITION OPENING & CLEANING.** Bulletin gives whys and wherefores of reconditioning your opening and cleaning lines. Special attention given to each machine with suggestions as to parts replacement. Saco-Lowell Shops, Replacement Parts Div., Box 327, Greenville, S. C.

T-123 **COILER CONVERSIONS.** Full facts on low initial cost conversion to larger coiler cans. Lists advantages, has complete description. Southern States Equipment Corp., Hampton, Ga.

T-124 **CARD DRIVE.** Bulletin 301-a describes simple, safe, efficient individual card drive. Southern States Equipment Corp., Hampton, Ga.

T-132 **PROCTOR SUPER PICKER.** Data sheet gives details of the Proctor Super Picker for use on slabs of baled cotton, or wool and synthetic blends in layers up to 12" thick. Proctor & Schwartz, Inc., 7th St. and Tabor Rd., Philadelphia 20, Pa.

yarn and warp making

T-201 **PRODUCTS FOR SPINNING AND WEAVING.** Complete line, applications, advantages shown. Dayco Corp., Textile Div., Dayton, Ohio.

T-202 **NEW BOBBIN MANUAL.** Complete bobbin guide. Lestershire Spool Division, National Vulcanized Fibre Co., Wilmington 99, Delaware.

T-203 **SPINDLE OIL.** "Gulfspin" insures against excessive wear and eliminates spindle wobble. Gulf Oil Corp., Gulf Bldg., Houston, Texas.

T-205 **HIGH SPEED AUTOMATIC QUILLER.** Lists advantages and dimensions of "Autocopser." Terrell Machine Co., Inc., P. O. Box 928, Charlotte, N. C.

T-208 **PACKAGED SPINNER MODERNIZATION.** Details on Collecto-Vac, Open-Aire Creels, Cross-Jet Cleaner, Air Conditioning Bahnson Company, Winston-Salem, N. C.

T-209 **SECTIONAL WARPER.** Describes full width and sectional warpers for knitting, weaving. Robert Reiner, Inc., Weehawken, New Jersey.

T-210 **CONICAL RINGS AND FLYERS.** Complete details and specifications. Herr Manufacturing Co., Inc., 318 Franklin St., Buffalo 2, New York.

T-211 **PRECISE WINDING MACHINE.** For winding pineapple or straight cones and tubes of synthetics. Foster Machine Co., Westfield, Mass.

T-212 **AUTOMATIC CLEANING EQUIPMENT.** Working details and advantages of the Tri-Rail Cleaner. American MonoRail Co., 111 East 200th St., Cleveland 17, Ohio.

T-216 **SPINNING FRAME CONVERSIONS.** Big-package, new frame results at half the cost. Meadows Mfg. Co., P. O. Box 10676, Station A, Atlanta, Ga.

T-217 **COLLECTO-VAC.** New development collects line, fly and broken ends. The Bahnson Company, Winston-Salem, N. C.

T-219 **SPINNING AND TWISTER RINGS.** Complete details, pictures, price list. Whitinsville Spinning Ring Co., Whitinsville, Mass.

T-223 **FACTS ABOUT YOUR FLYERS AND SPINDLES.** Advantages of smooth flyer and spindle operation. Ideal Machine Shops, Bessemer City, N. C.

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BOOKLETS

T-227 **SPINDLE OILING MACHINE.** Features and advantages noted. Wicaco Machine Corp., 4800 Stenton Ave., Wayne Junction, Philadelphia 44, Pa.

T-228 **HANDY SPINNING REFERENCE.** Shows traveler speeds, sizes of ring flanges. Saco-Lowell Shops, Parts Replacement Division, P. O. Box 327, Greenville, South Carolina.

T-229 **UNIRAIL UPTWISTER.** Higher yarn quality and better packages at faster speeds. Leesona Corp., P. O. Box 1605, Providence, R. I.

T-230 **PRECISION TEXTILE WINDING.** Tensions and density control for winding rubber cones. Kidde Textile Machinery Corp., Farrand St., Bloomfield, N. J.

T-231 **CONE WINDER.** Describes Model 102 winder, including applications. Foster Machine Co., Westfield,

T-232 **SHORT CUT TO STAPLE FIBER SPINNING.** Ten steps in operation of the Tow Stapler. Turbo Machine Co., Lansdale, Pa.

T-233 **WEAVER'S KNOTTER.** Instructions as to use, description. A B. Carter, Inc., Gastonia, N. C.

T-234 **TEXTILE ROLL COVERINGS.** Describes complete line as well as other mill supplies. Armstrong Cork Co., Industrial Div., Lancaster, Pa.

T-239 **LARGE PACKAGE TWISTER.** Information on new anti-friction Jumbo Twister which carries a 14" bobbin with a 12" build. Meadows Mfg. Co., P. O. Box 10876, Sta. A. Atlanta, Ga.

T-241 **PACEMAKER TWISTERS.** Folder gives details on high production, outlines notable features. Whitin Machine Works, Whitinsville, Mass.

T-242 **RING SPINNING FRAME.** Folder presents description, illustrations and specifications of up-to-date Simplex ring spinning frames. Davis & Furber Machine Co., North Andover, Mass.

T-243 **ANTI-FRICTION TWISTER BEARINGS.** Find out how bearings helped make The Meadows Twister almost friction-free. Fafnir Bearing Company, New Britian, Conn.

T-246 **BETTER BEAMS.** Information on three ways to make better beams. Kidde Textile Machinery Corp., Farrand St., Bloomfield, N. J.

T-250 **SPINNING MODERNIZATION.** Booklet shows how lower costs and improved quality are obtained by spinning modernization. Roberts Company, Sanford, N. C.

T-255 **NEW BOBBIN HOLDER.** Details on streamlined, positive latching bobbin holder. Whitehead Die Casting Co., 1140 Zonolite Rd., Atlanta, Ga.

T-256 **HUMIDIFIER PROTECTION** — Brochure tells how "Rustex" can stop rust and corrosion and prevent discolored water in your humidifying system. Odorless and completely harmless to personnel, or goods. Anderson Chemical Co., Inc., Box 1424, Macon, Georgia.

T-257 **COMETSA SPINDLES.** Bulletin gives details of high-precision, vibration free Cometsa spindles. Cometsa Spindle Co., Lake Carmel, New York.

slashing—weaving—tufting

T-301 **COUNTING AND MEASURING DEVICES.** Wide range of counting devices for all types of textile machinery. Veeder-Root, Inc., Hartford, Conn.

T-302 **LOOM SUPPLIES.** Describes complete line. E. H. Jacobs Mfg. Co., P. O. Box 3096, Charlotte, N. C.

T-304 **LOOM PRODUCTION CHARTS.** Celluloid card shows yards per loom per week. Ralph E. Loper Co., Greenville, S. C.

T-306 **THE STORY OF STARCHES.** History and information on manufacture and use of starches National starch & Chemical Corp., 750 Third Ave., New York 17, N. Y.

T-309 **PENFORD GUMS IN TEXTILES.** Describes their excellent properties for warp sizing spun yarns. Penick & Ford Ltd., Inc., 750 Third Ave., New York 17, New York.

T-314 **LOOM REED BOOKLET.** Describes in detail a variety of reeds. Steel Heddle Mfg. Co., 2100 West Allegheny Ave., Philadelphia 32, Pa.

T-315 **COCKER EQUIPMENT.** Information on warp sizer, beam warper, creels, tensions, back-winders, etc. Cocker Machine & Foundry Co., Gastonia, N. C.

T-318 **FORMULAS FOR SLASHING ARNEL.** Includes also information on warping, weaving and quilling. Textile Sales Dept., Celanese Corp. of America, P. O. Box 1414, Charlotte 1, N. C.

T-319 **ECLIPSE STARCHES FOR TEXTILES.** Data sheet describes use of thin-boiling starches in the textile industry, with particular emphasis on warp sizing. Physical and chemical data included. A. E. Staley Mfg. Co., Decatur, Ill.

T-321 **COCKER SLASHERS.** Complete specifications and advantages, including allied equipment. Cocker Machine & Foundry Co., Gastonia, N. C.

T-322 **MOUNTS FOR LOOMS.** Vinyl mount eliminates need for bolts or paste. Clark, Cutler, McDermott Co., 106 W. Central St., Franklin, Mass.

T-323 **UNIFIL LOOM WINDER.** Describes new concept of filling preparation which needs no quilling area. Leesona Corp., P. O. Box 1605, Providence, R. I.

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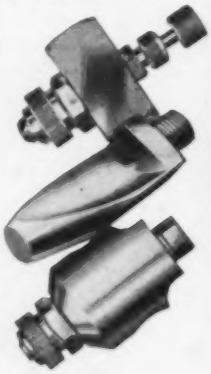

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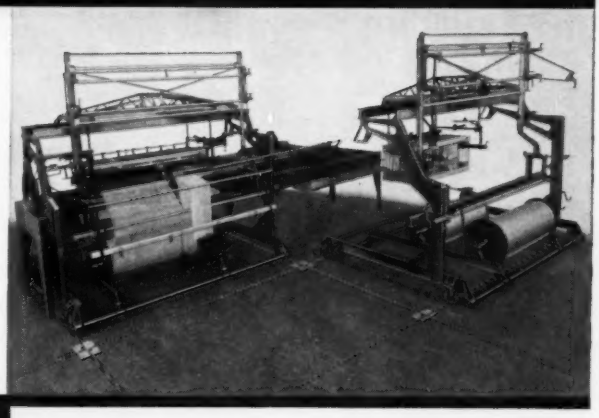
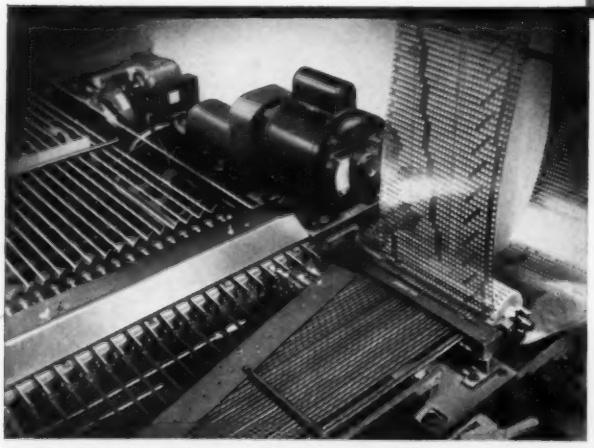
DRAW ALL 3 ELEMENTS... HEDDLES, DROP WIRES, REED

This modern Model SH (shown here in the two-truck type) permits drawing-in of keyhole type steel heddles in combinations up to 24 frames and with or without 8 or less banks of closed-end drop wires, plus reed. At each stroke of the needle the proper combination of all elements is accurately drawn, in correct sequence, under positive mechanical control, and at a rate of up to 4500 ends per hour. These machines are of tremendous value in meeting the challenge of today's fast-changing textile merchandising.





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This perforated pattern, which can be punched in either metal or paper, governs all the coordinated actions of the machine. As an example of versatility, the pattern shown is for a split sheet draw from two warp rods, entered in 22 harness, 6 banks of drop wires, and two threads per dent in the reed.

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BOOKLETS

T-324 **ALIGNING LAYS.** Setting instructions for step-by-step aligning. Draper Corporation, Hopedale, Mass.

T-325 **TRAVELING LOOM CLEANER.** Advantages of the new Oscillaire loom cleaner. Parks-Cramer Co., Fitchburg, Mass.

T-326 **DRAPER REPAIR PARTS CATALOG.** Contains illustrations covering all mechanisms and construction with complete listings. Draper Corporation, Hopedale, Mass.

T-328 **TEXTILE MACHINERY PARTS CATALOG.** Describes complete line of Dayco and Thorobred textile parts. Dayco Corp., Dayton, Ohio.

T-329 **COUNTING DEVICES.** Describes complete line of counters for every application. Trumeter Company, 38 W. 32nd St., New York 1, New York.

T-331 **STATIC BARS.** Humorously illustrates how static can be overcome. The Simco Co., 920 Walnut St., Lansdale, Pa.

T-332 **CARE OF DRAPER SHUTTLES.** Describes how longer, trouble-free service may be obtained. Draper Corporation, Hopedale, Mass.

T-346 **FACTS ON NONWOVENS.** Fact file on non-wovens tells of new machinery, new methods of handling fibers, new bonding agents, etc. Curlator Corporation, Textile Division, East Rochester, N. Y.

T-347 **New DRYING SYSTEM.** Describes high capacity, custom engineered drying equipment for tufted plants. Dalton Sheet Metal Co., Inc., Dalton, Ga.

T-351 **AUTOMATIC STOP MOTION.** Complete information available on automatic stop motion for Titan warp tying-in machine. Edda International Corp., 468 Fourth Ave., New York 16, N. Y.

T-353 **BACKING FOR TUFTEDS.** How to get your tufting necessities with one telephone call. Fulton Cotton Mills, P. O. Box 1726, Atlanta 1, Ga.

T-355 **NON-WOVEN FABRICS.** Booklet gives outline of nature and history of non-woven and the manufacturing techniques of today. Booklet 56-219A. Chemical Div., Goodyear Tire & Rubber Co., Akron 16, Ohio.

T-358 **LOOM SUPPLIES.** Information on rod lubricant and applicator, sponge leather bunter, picker. Garland Mfg. Co., 54 Water St., Saco, Me.

T-362 **SIZE THAT SATISFIES.** Information on getting the correct size package for your mill. Also on Bingham line of slasher rolls. Stodghill & Co., 716 Ponce de Leon Place, Atlanta, Georgia.

T-363 **RUBBER COVERED SLASHER ROLLS.** Handy booklet tells how to get longer life and better performance from rubber covered rolls. Includes data on handling storing and grinding. Stowe-Woodward, Inc., Dept C., 181 Oak St., Newton Upper Falls 64, Mass.

T-364 **CONTINUOUS STARCH COOKER.** Booklet shows how the use of continuous cookers for starch assures accurate control, economy, low maintenance in warp sizing and finishing. Clinton Corn Processing Company, Clinton, Iowa.

knitting

T-403 **RASCHEL KNITTER.** Describes new Raschel-type knitting machine. Kidde Textile Machinery Corp., Inc., Farrand St., Bloomfield, N. J.

T-406 **NEEDLE OIL DOES NOT STAIN.** Details on "Guiftex 39" developed for knitting mills. Gulf Oil Corp., Gulf Bldg., Houston, Texas.

T-407 **KNITTING MACHINES.** Information on Wildman "TFS" 30" single section F-F machines and "AL" 30" diameter 32-feed "single purpose" circular interlock machine (rib type) Wildman-Jacquard Div., Draper Corp., Hopedale, Mass.

T-410 **"READING" TYPE 60 F-F KNITTING MACHINE.** Information about the new "Reading" Type 60, 38-section automatic full-fashioned hosiery knitting machine. Write Textile Machine Works, Reading, Pa.

wet processing

T-500 **WEBB GUIDE SYSTEMS.** Folio No. EG-84 describes webb guide systems for cloth applications. G.P.E. CONTROLS, INC., 240 E. Ontario St., Chicago 11, Ill.

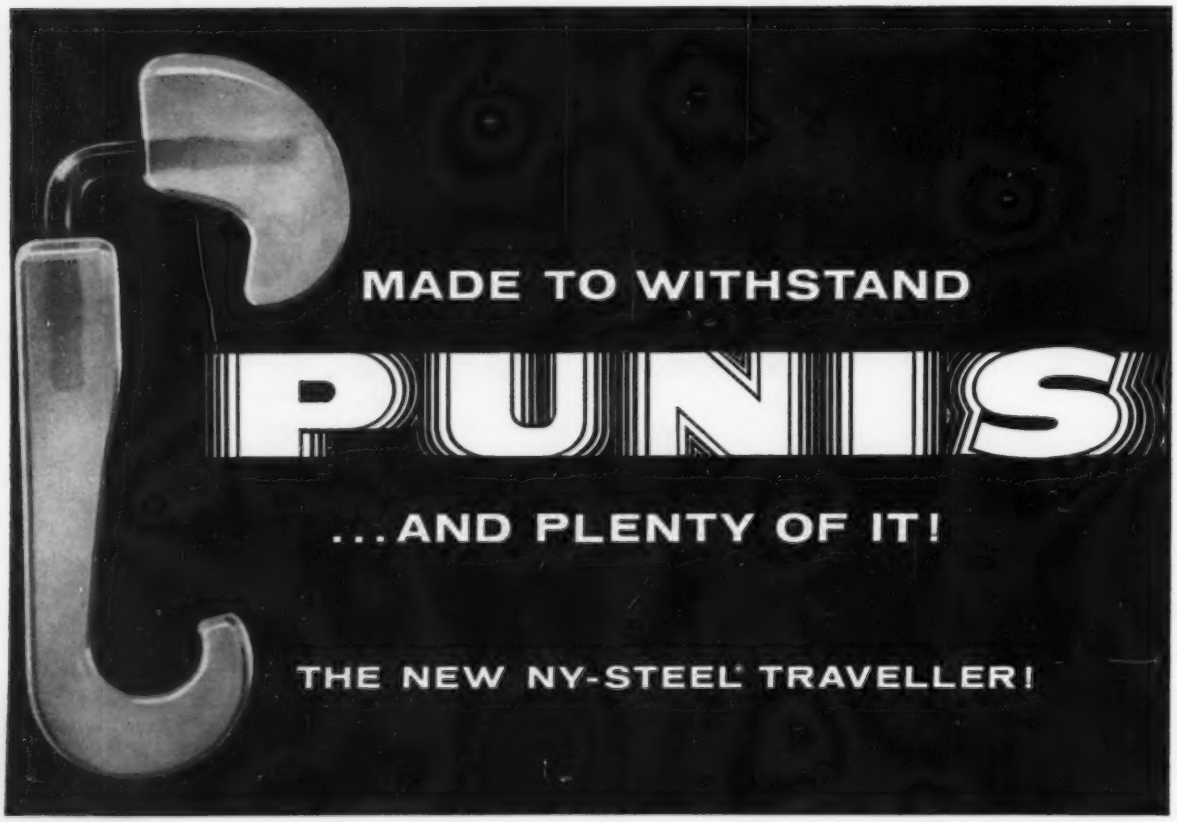
T-502 **FINISHING MACHINERY.** Text and photographs of complete line of machinery. Marshall and Williams Corp., 46 Baker St., Providence, R. I.

T-503 **WATER ANALYSIS.** Includes tables, conversion factors, indicators, standard solutions. Solvay Process Div. Allied Chemical Corp., 61 Broadway, New York 6, N. Y.

T-504 **UREA FORMALDEHYDE.** Literature on urea formaldehyde or U.F. concentrate-85. Dept. CUFI-29-1. Nitrogen Div., Allied Chemical Corp., 40 Rector St., New York 6, New York.

T-506 **CATIONIC SURFACE ACTIVE AGENT.** Describes Uversoft "D." Harshaw Chemical Co., 1945 East 97th St., Cleveland 6, Ohio.

T-508 **PEROXIDE BLEACHING SYSTEM.** Illustrates and describes this continuous system. E. I. du Pont de Nemours & Co., Electrochemical Dept., Wilmington, Del.



For further information use Handy Return Card, Page 173

T-510 **TEXTILE CHEMICALS.** Describes leading products for wet processors. Royce Chemical Co., Carlton Hill, N. J.

T-512 **DEPUMA.** Decribes odorless, viscous, non-evaporating emulsion for anti-foam. Koppers Co., Inc., Chemicals & Dyestuffs Div., Porter Bldg., Pittsburgh 19 Pa.

T-513 **CATALYST AC-6.** Tells how curing efficiency may be stepped up as much as 25%. Monsanto Chemical Co., Plastic Division, Springfield 2, Mass.

T-514 **SODA ASH BULLETIN.** Contains useful data covering this subject. Solvay Sales Division Allied Chemical Corp., 40 Rector St., New York 6, New York.

T-516 **ALUMINUM CHELATE PEA-1.** Technical data sheet tells how aluminum Chelate PEA-1 may be used with advantage in many applications where aluminum in proplate is unsatisfactory. Harshaw Chemical Co., 1945 East 97th St., Cleveland 6, Ohio.

T-517 **CHEMICAL CATALOG.** Lists products with chemical composition, properties and applications. Antara Chemicals Div., General Aniline & Film Corp., 435 Hudson St., New York 14, New York.

T-519 **HYDRAULIC POWER UNITS.** Describes unit for operating hydraulic textile machines. B. F. Perkins & Son, Inc., Holyoke, Mass.

T-522 **CUT WATER TREATMENT COSTS.** Describes the control of scale, slime, algae and corrosion. Oakite Products, Inc., 126C Rector St., New York 6, New York.

T-526 **PRODUCTS FOR TEXTILE IMPROVEMENT.** Describes products and services designed to provide better fabrics. B. F. Goodrich Chemical Co., 3135 Euclid Ave., Cleveland 15, Ohio.

T-527 **SODIUM HYDROSULFITE.** Literature and test samples are available on "T-C Hydro." Tennessee Corp., 617-629 Grant Bldg., Atlanta, Ga.

T-528 **ETHANOLAMINES.** Lists application, chemical and physical properties. Nitrogen Division, Allied Chemical Corp., 40 Rector St., New York 6, New York.

T-531 **ROTARY DYEING MACHINE.** For use in dyeing hosiery, hats, gloves, socks, etc. Turbo Machine Co., Lansdale, Pa.

T-534 **DYEING AND FINISHING MACHINERY.** Complete line presented in series of catalogs. Birch Brothers, Inc., 32 Kent St., Somerville 43, Mass.

T-535 **DYEING, BLEACHING AND DRYING EQUIPMENT.** Complete line for cotton, wool and synthetics described. Color pictures. Morton Machine Works, 1718 3rd Ave., Columbus, Ga.

T-536 **NAPHTHOL RATIOS SLIDE CHART.** Quickly and accurately enables operators to determine Naphthol Ratios. Alliance Color & Chemical Co., 33 Ave. P, Newark 5, New Jersey.

T-540 **PENFORD FINISHING GUMS.** Complete data, including physical properties. Penick & Ford Ltd., Inc., 750 Third Ave., New York 17, New York.

T-541 **REGENERATION OF ZEOLITE WATER SOFTENERS.** Explains advantages of Lixate Process. International Salt Co., Scranton, Pennsylvania.

T-542 **DYEING SNYTHETIC FIBERS.** Detailed analysis of methods and materials. General Dyestuff Co., 435 Hudson St., New York 14, New York.

T-543 **INDUSTRIAL BRUSHES.** Features use on shears, printing machines. M. W. Jenkins' Sons, Inc., 444 Pompton Ave., Cedar Grove, N. J.

T-544 **WASTE HEAT RECOVERY.** Describes system of waste heat recovery from polluted water. Ludell Mfg. Company, 5200 West State Street, Milwaukee, Wis.

T-545 **WASHERS FOR SCOURING, BLEACHING, ACIDIFYING.** Describes high capacity, continuous process washers. C. G. Sargent's Sons Corp., Graniteville, Mass.

T-546 **NAPHTHOL FOR LIGHTFAST BROWNS.** Booklet describes new, straight, non-substantive naphthol. Naphthol As-BN, for the continuous naphtholation of cotton and rayon piece goods in the dyeing of economical, fast-to-light browns. General Dyestuff Co., 435 Hudson St., New York 14, New York.

T-547 **SOFTENER LUBRICANT, NAPPING AID.** Technical information available on softener, lubricant and napping aid for natural and synthetic fibers, yarns and fabrics. Nopco Chemical Co., Harrison, N. J.

T-554 **INSTRUMENT CATALOG.** Complete information on industrial instrument accessories and supplies. Includes specifications, parts numbers and prices. Catalog 500, Foxboro Co., Foxboro, Mass.

T-556 **HUNTER DYEING EQUIPMENT.** Describes fully with diagrams Hunter Model A Dye Becks, Hunter No/Lap Reels, Model S Dye Kettles. Open Width Dye Kettles. Sample Dye Kettles. James Hunter Machine Co., North Adams, Mass.

T-557 **HIGH ACTIVITY CATALYST.** Technical bulletin describes new catalyst AC-6 which provides increased activity, excellent bath life, minimum odor formation, etc. Monsanto Chemical Co., Plastics Div., Springfield, Mass.

T-558 **CATIONIC DYE LEVELER.** Bulletin TX-34 gives new information on dye leveler for acid colors on nylon tricot and wool through use of Nopco 1435-B. Nopco Chemical Co., Textile Chemicals Div., Harrison, N. J.

T-561 **PUMP POURABLE PASTES.** Bulletin tells how Moyno pumps can pump any textile liquid that can be forced through a pipe, even if highly viscous or corrosive. Robbins & Myers, Inc., Springfield, Ohio.

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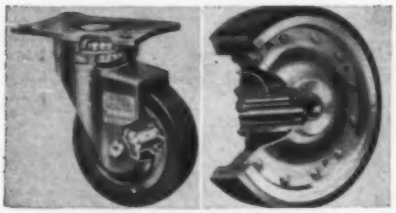

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T-563 **POLYETHYLENE FINISHING AGENT.** Booklet contains information needed to adopt Emulsifiable A-C polyethylene as a finishing agent to any particular process. Semet-Solvay Petrochemical Div., Allied Chemical Corp., 5th Floor T, Rector Street, New York 6, N. Y.

T-564 **HYDROGEN PEROXIDE BLEACHING.** Booklet discusses advantages, operating details and savings in chemical costs of Activated Hydrogen Peroxide Bleaching Process for Cotton Solvay Process Div., Allied Chemical Corp., 61 Broadway, New York 6, N. Y.

T-566 **ETHYLEX GUMS.** Brochure describes properties of hydroxy ethyl ether derivatives of corn starch. Applications of these noncongealing gums in warp sizing and finishing covered. A. E. Staley Mfg. Co., Box 151, Decatur, Ill.

T-572 **DYEING MACHINERY FOR EVERY PURPOSE.** Illustrated literature available on complete line of automatically controlled machinery. Gaston County Dyeing Machine Co., Stanley, N. C.

T-576 **YARN PREPARATION.** Describes products for yarn preparation, printing, finishing. Polymer Industries, Springdale, Conn.

T-577 **STAINLESS DRY CANS.** Information on stainless steel, 75 psi, reverse dished, head dry cans. Can be furnished Teflon-coated if desired. Sims Metal Works, West Point, Ga.

T-579 **AUTOMATIC GUIDING EQUIPMENT.** Catalog shows various types of automatic guiding equipment for accurate cloth guiding. Fife Mfg. Co., Inc., P. O. Box 9815, Oklahoma City, Okla.

T-580 **AIR SLASHER DRYER.** Shows construction and operating details. Proctor & Schwartz, Inc., 7th St. and Tabor Rd., Philadelphia 20, Pa.

T-581 **BUTT-TACKING SEWING MACHINE.** Describes operation, installation of single thread butt-tacking sewing machine. The Merrow Machine Co., 28 Laurel St., Hartford, Conn.

fibers and yarns

T-601 **FORTISAN-36, NEW TEXTILE FIBER.** Includes charts, diagrams, text, presents technical properties. Textile Sales Dept., Celanese Corp. of America, P. O. Box 1414, Charlotte, N. C.

T-602 **CAPROLAN NYLON HEAVY YARNS.** Describes strength, long flex life and ready dyeability. Fiber Sales Dept., National Aniline Div., 261 Madison Ave., New York 16, N. Y.

T-604 **THE CHEMSTRAND NYLON STORY.** Describes the birth and growth of Chemstrand Nylon. Chemstrand Corp., 350 Fifth Ave., New York 1, N. Y.

T-605 **COLOR-FAST FIBERS.** Further information on "Coloray." Courtauld's solution dyed rayon staple which is a contribution to color fastness in fabrics. Courtaulds (Alabama) Inc., 600 Fifth Ave., New York 20, N. Y.

T-608 **TASLAN TEXTURED YARNS.** Technical information on dyeing and finishing of new fabrics made with Taslan. E. I. du Pont de Nemours & Co., Wilmington 98, Delaware.

T-609 **PROCESSING NYLON STAPLE.** Data sheet describes method of processing Du Pont 42 Nylon Staple in blends with cotton. Covers complete operation through sizing. Bulletin N-93. E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

laboratory

T-701 **TESTING INSTRUMENTS.** Descriptions of 37 instruments for testing textiles. Custom Scientific Instruments, Inc., 541 Devon St., Kearny, N. J.

T-703 **SHADOGRAPH WEIGHING DEVICES.** Pictures and information on various types of scales. Exact Weight Scale Co., Columbus 8, Ohio.

T-705 **STROBOTAC.** Measures speed of rotating, reciprocating or other cyclic motions. General Radio Co., West Concord, Mass.

T-706 **YARN COUNT SCALE.** Data sheet tells how direct-reading instrument provides fast, accurate method of determining yarn number. Exact Weight Scale Co., Columbus 8, Ohio.

services for management

T-801 **FACTORING SERVICE.** Details on advantages of factoring, including information on general banking and pension plans. Trust Company of Georgia, Atlanta, Ga.

T-805 **PROFIT THROUGH FACTORING.** Brochure gives facts on the use of factoring as a modern plan for developing sound business growth and added profits. Walter E. Heller & Co., Dept. TT-2, 105 W. Adams St., Chicago 99, Ill.

T-808 **FACTORING.** Complete details on services offered as mill factors. L. F. Dommerich, 271 Madison Ave., New York, N. Y.

T-810 **THE WONALANCET WAY** is the title of an editorial booklet published five times a year dealing with current cotton problems. Write Wonalancet Company, 128 Burke St., Nashua, N. H.

T-812 **BEECHCRAFTS FOR 1961.** Booklet available from Southern Airways Company shows how Beechcraft executive airplanes can save executives time and money. Write Southern Airways Co., P. O. Box 718, Atlanta, Ga.

T-819 **ORGANIZED LUBRICATION PAYS.** Planning book entitled "Management Practices that Control Costs via Organized Lubrication" shows how to effect savings in five areas of plant operation. Available from Texaco, Inc., 135 E. 42nd St., New York 17, N. Y.

plant operation

T-902 **BELT LACING EQUIPMENT.** Includes prices, specifications, etc. Clipper Belt Lacer Co., Grand Rapids, Michigan.

T-903 **"MOTOR SELECTOR."** How to select a-c motors for specific application. Bulletin B-2103. Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17, Ohio.

T-904 **GEARMOTORS, MOTORGEARS, AND FLUID DRIVES.** Catalog supplies complete information on double, triple, and quadruple reduction gearmotors and motorgears. Electrofluid and

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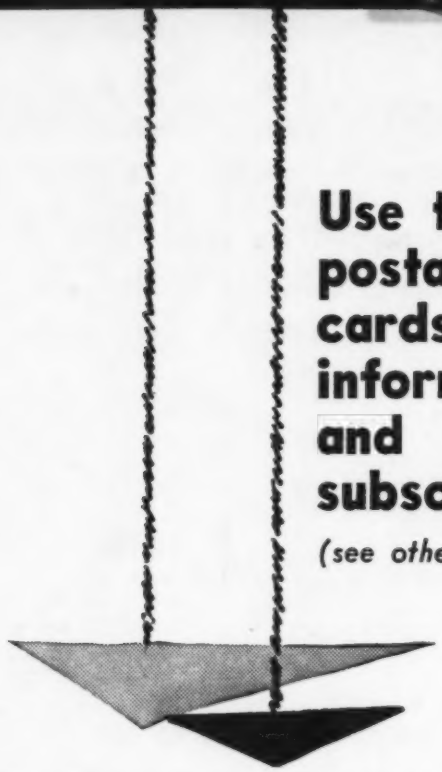

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fluid drives are also explained. Link-Belt Company, Dept. PR, Prudential Plaza, Chicago 1, Illinois.

T-907 WRAP UP LINT PROBLEMS. Automatic lint filter removes lint from air, winds it into disposable roll. Bulletin 234, American Air Filter Co., 275 Central Ave., Louisville 8, Ky.

T-908 TEXTILE MOTORS. Bulletin describes complete line of textile motors. Diehl Mfg. Co., Finderne Plant, Somerville, N. J.

T-909 COMPRESSORS. WB two-stage water-cooled. Space-saving units require modest foundation up to 125 psi and 1150 cfm displacement. Bulletin WB-10. Gardner-Denver Company, Quincy, Illinois.

T-910 MODERN LUBRICATION METHODS. A report to management tells how modern lubrication methods can help save thousands of dollars in three major economic areas of textile plant management. Describes twelve operating advantages of automatic lubrication systems. Lincoln Engineering Co., 4010 Goodfellow Blvd., St. Louis 20, Mo.

T-912 STORY OF NYLON BRISTLE. Tells of discovery and production, with special attention to "Tynex," a form of nylon ideal for use in brushes. M. W. Jenkins' Sons, Inc., 444 Pompton Ave., Cedar Grove, N. J.

T-913 "ONE-SHOT" LUBRICATORS. Bulletin describes wide field of application for one-shot lubricators on machines requiring closely controlled but infrequent oil feed. Bijur Lubricating Corporation, Rochelle Park, N. J.

T-914 INDUSTRIAL GREASES. Describes multi-purpose lithium soap industrial greases. Sinclair Refining Co., 600 Fifth Ave., New York, New York.

T-917 BLOWERS AND EXHAUSTERS Full description, including detailed drawings. Buffalo Forge Co., 490 Broadway, Buffalo 5, N. Y.

T-918 PAINT STRIPPING BOOKLET. Explains simplified method of stripping paint. Oakite Products, Inc., 22 Thames St., New York 6, New York.

T-921 CATALOG OF NEEDLE BEARINGS. Design, application for five types of needle bearings. The Torrington Co., Torrington, Conn.

T-924 BALL BEARINGS FOR TEXTILE MACHINERY. Bearings for all phases of textile processing. The Fafnir Bearing Co., New Britain, Conn.

T-925 LUBRICATION OF BEARINGS. Helpful list of do's and don't to prolong bearing life. New York & New Jersey Lubricant Co., 292 Madison Ave., New York 17, New York.

T-931 NEW V-BELT DRIVES. Bulletin contains information on selection and operation of V-belt drives. Covers all types of V-belt drives. Dodge Mfg. Corp., Mishawaka, Ind.

T-932 SMOOTH ACCELERATION, DECELERATION. Describes eddy-current equipment for smooth, stepless acceleration and deceleration. Eaton Mfg. Co., 3307 14th Ave., Kenosha, Wis.

T-937 V-BELTS. Tells how raw materials and finished belts are tested and inspected. Quality control and experimental production covered. Booklet 5-51107, Dept. 794, Goodyear Tire & Rubber Co., Akron 16, Ohio.

T-938 EMERGENCY CHEMICAL CLEANING—Booklet tells how rust, scale and other deposits may be removed from heat exchange equipment, regardless of intricacy. Anderson Chemical Co., Inc., Box 1424, Macon, Georgia.

T-939 BOILER FEEDWATER TREATMENT. Bulletin describes BRAXON & FLAKO internal automatic boiler feedwater treatment and services of trained service engineers in eliminating the problems of scales, sludge, corrosion, etc. Anderson Chemical Co., Inc., P. O. Box 1424, Macon, Ga.

T-940 VARI-SPEED MOTOR PULLEY. Describes variable speed control through use of simplified three-major-part disc-assemblies with only one lubrication point. Reeves Pulley Co., Reliance Electric & Engineering Co., Columbus, Ind.

T-941 BALING PRESSES. Describes complete line of motor-driven and hydraulic baling presses. Logemann Brothers Co., 3150 West Burleigh St., Milwaukee, Wis.

materials handling

T-1005 TRAMRAIL ENGINEERING AND APPLICATION. Data on how Tramrail equipment can cut handling costs. Cleveland Tramrail Div., Cleveland Crane and Engineering Co., 1036 East 289th St., Wickliffe, Ohio.

T-1007 MATERIALS HANDLING FOR TEXTILES. Shows how fibre trucks can increase efficiency, protect products. National Vulcanized Fibre Co., Wilmington 99, Del.

T-1013 TRUCKS DOFF, STORE, BECOME SPOOLER TRAY. Brochure tells how mobile boxes are being used as doff boxes, storage boxes, and spooler trays on Barber-Colman spooler. Fisher Mfg. Co., Hartwell, Ga.

T-1014 CARPET CORES, STORAGE TUBES. Literature on simplified storage and better cores for rugs. Sonoco Products Co., Hartsville, S. C.

T-1015 OVERHEAD CONVEYOR. Catalog features "Cable-Way" Overhead Conveyor which has low-cost, ease of installation, quiet operation and long life. Conveyor Division, The American MonoRail Co., Fourth and Franklin Sts., Tipp City, Ohio.

T-1020 AUTOMATIC WRAPPING. Tells how automatic packaging increases the sales appeal of textile products. Saves labor and materials and adds tamper-proof product protection. Write Hayssen Mfg. Co., Sheboygan, Wis.

T-1021 TUBES, BOBBINS, PIRNS. Information on world renowned yarn carriers, reliable as to stability, dimensions, weight. Emil Adolff (U. S. A. agents: Textube Corp., 695 Summer St., Stamford, Conn.)

T-1022 STRONG CORES. Data on lightweight, quality tubes and cores for textiles. Star Paper Tube, Inc., Rock Hill, S. C.

T-1023 MATERIALS HANDLING. Describes lightweight, durable, smooth products. Spaulding Fibre Co., Inc., Dover, New Hampshire.

T-1024 CONDITIONING TRUCK. Details on all-aluminum, non-rusting conditioning truck. Excel, Inc., Lincolnton, N. C.

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PERSONAL NOTES

(from page 46)

sonnel manager of Clarksville (Ga.) Mill, a subsidiary of United Merchants & Manufacturers, Inc.

D. W. Edwards, efficiency engineer at the Rockmart, Ga., plant of Goodyear Tire & Rubber Co., has been named development engineer at the Cartersville, Ga., mill.

A. N. Morradian has been elected a vice-president of Reeves Brothers, Inc., and named general merchandise manager of the finished goods department, which includes cottons, blends, and synthetic fabrics for the apparel trades.

William I. Kent, president of The Kent Mfg. Co., Clifton, Heights, Pa., has been named chairman of the executive committee of the board, National Association of Wool Manufacturers.

Cameron A. Baker, director of research and development of Better Fabrics Testing Bureau, Inc., was recently elected to the New York district council of the American Society for Testing Materials.

John W. Connell has been elected a vice-president of Indian Head Mills, Inc. **Lester Schner** has been named controller and assistant treasurer, and **George S. Goffe** has been appointed an assistant treasurer. * * * **Robert F. Strahley** has been named assistant division manager of the Franklin Process Co., a division of the firm. In his newly-created position, Mr. Strahley will be in charge of operations of the three plants located at Greenville, S. C., Fingerville, S. C., and Chattanooga, Tenn.

William Joshua Vines has been appointed managing director of the Internation Wool Secretariat. Mr. Vines will supervise the operations of three regional branches covering 16 countries throughout the world, including Asia, Europe, and North America.

John Milton Holmes, chief engineer at the Bradford Dyeing Association, U. S. A., Westerly, R. I. has retired.

Robert T. Graham has been named director of research for the National Institute of Drycleaning succeeding **Dr. Joseph R. Wiebush,** who has accepted the position of associate professor of chemistry at the Naval Academy in Annapolis, Maryland.

Robert Neill has been named to the board of directors of Paton Manufacturing Co., Ltd., Montreal, Canada, and appointed to the newly-created post of managing director. **S. A. Gray** has been appointed secretary-treasurer.

William L. Lawson has been elected vice-president of Van Raalte Co.

Jackson E. Spears, vice-president of Burlington Industries, Inc., has retired. Mr. Spears will continue as a consultant. * * * **R. E. Caldwell Roane** has been named assistant vice-president of Burlington Hosiery Co.

E. Randall Poole has been named personnel manager of Carlisle (S. C.) Finishing Co., a division of Cone Mills Corp.

James Dorroh Hairston, secretary of Lydia Cotton Mills, Clinton, S. C., has retired.

Russell B. Newton has been elected chairman of the board of directors of Deering Milliken Research

Continued on page 178

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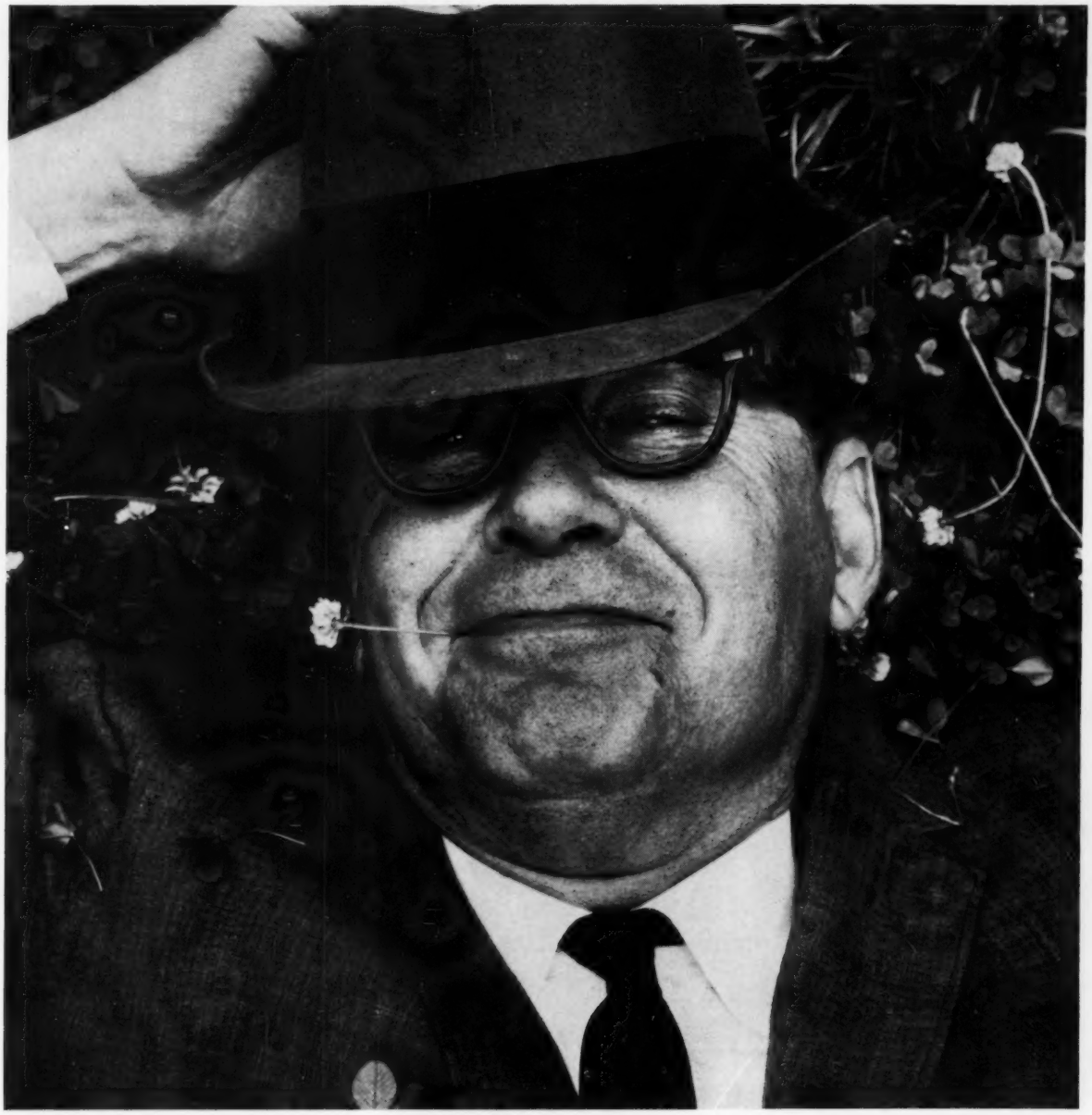

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*Du Pont's registered trademark for its acrylic fiber. **Du Pont's registered trademark for its polyester fiber.

PERSONAL NOTES

(from page 176)

Corp. **Dr. Linton G. Ray, Jr.,** has been named to succeed Mr. Newton as president of the firm.

Robert J. McCamy, assistant general manager of the Lindale (Ga.) division of Pepperell Mfg. Co., has been promoted to the position of assistant to the executive vice-president. **Robert O. Simmons** has been named assistant general manager, **Robert F. Horsley** has been appointed general superintendent, and **Vance L. Cathey** has been promoted to assistant general superintendent. **Jack Henderson** was named cotton buyer for the division.

David Murray Remson, Jr., manager of cotton classing at Avondale Mills, Sylacauga, Ala., has retired.

Ronnie Koon has been named assistant overseer of finishing at the Trion, Ga., division of Riegel Textile Corp. **George Mewborne** has been promoted to second hand, second shift, finishing; and **Don Shumate,** who is a general supervisory assistant, has been assigned to spooling, warping, winding, and knitting on the first shift. * * * **John E. Schroeder,** formerly associated with Lebanon of California, has been named superintendent of knitting.

Mr. McCamy
Pepperell

Mr. Simmons
Pepperell

Mr. Horsley
Pepperell

Mr. Cathey
Pepperell

Mr. Henderson
Pepperell

Mr. Schroder
Riegel

Mr. McAuley
Chicopee

Mr. Shaw
Chicopee

John F. Shaw, vice-president and director of the Chicopee Mfg. Corp., has retired. * * * **Thomas M. McAuley,** vice-president and director, has been appointed general manager of the firm's operations in Chicopee Falls, Mass.

J. O. Thomas, employment manager of the Leaksville, N. C. plant of Fieldcrest Mills, has retired.

Robert S. (Buck) Horton has assumed duties as personnel director for National Spinning Co., Whiteville, N. C.

Irving Newman has been appointed production manager of Dean Manufacturing Co., Monroe, N. C.

W. Raymond "Ray" Bell, president of the Association of Cotton Textile Merchants of New York, has retired.

Arthur B. Lauman has been named president of Crown Carpet Mills, Inc., Dalton, Ga. **James C. Barbre** has been appointed executive vice-president, and **Clifford D. Allen** has become treasurer and comptroller.

David Krivitsky, formerly export sales manager, has been named to the newly created position of vice-president of sales for Ansonia Mills, New York City.

Eugene W. Owen, of Canton Cotton Mills, Canton, Ga., has been named chairman of the personnel managers division of the Georgia Textile Manufacturers Association. Other officers elected were: vice-chairman—**Virgil E. Adams,** Jefferson (Ga.) Mills, Inc., and secretary—**O. B. Moore, Jr.,** of the GTMA staff, Atlanta.

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Company_____
Address_____
City & State_____
Proposed Application_____

W161-3

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Paul Homier has joined the Lantuck nonwoven fabrics division of West Point Manufacturing Co., Fairfax, Ala., as technical service supervisor.

Fred Fortess, manager of dyeing and finishing laboratories for Celanese Fibers Company, Charlotte, N. C., has been selected to receive the 1961 Olney Medal of the American

Association of Textile Chemists and Colorists. The medal is awarded for outstanding scientific achievement in the field of textile chemistry.

George P. DeBrule has been named superintendent of Craftspun Yarns, Inc., Kings Mountain, N. C.

Clark Easterly has been elected president and general manager of Johnstown (New York) Knitting Mill Co.

George McQuilkin, controller of the Kendall Co., has been named manager of J. W. Wood Co., a new subsidiary of the Kendall Co.

Albert V. Morrell has been appointed manager of the York, Pa., plant of United Piece Dye Works succeeding **Russell DeWitte,** a vice-president of the company, who was recently named manager of the plant in Bluefield, Va.

Thomas G. Price has been named to the position of training director for Fulton Cotton Mills' grey mills. Mr. Price will have the responsibility of training new employees and conducting loom fixing courses.

George R. Thompson has been appointed vice-president and general manager of Fox River Valley Knitting Co., Appleton, Wis.

OBITUARIES

Gustave C. Aberle, Sr., 71, retired owner of Aberle, Inc., Wyncote, Pa.

Ralph Allan, 71, executive of Gaede Dyeing Co., Hawthorne, N. J.

Robert S. Bradley, 70, retired district service manager of Saco-Lowell Shops, Easley, S. C.

Thomas R. Briggs, 62, president and general manager of Johnstown Knitting Mill Co., and a director of the Underwear Institute, Johnstown, N. Y.

A. Paul Cohen, 69, former president and treasurer of Suffolk Knitting Co., Lowell, Mass.

Linton Stephens Flemister, retired vice-president and general manager of United Hosiery Mills, Chattanooga, Tenn.

H. Leslie Garth, owner of Garth Manufacturing Co., Little Falls, N. J.

Arthur L. Guerin, Sr., retired head of Arthur L. Guerin Wool Company, Woonsocket, R. I.

Edward F. Hayes, 52, executive vice-president of Riggs & Lombard, Inc., Lowell, Mass.

Earnest Hemschot, 59, retired executive vice-president of the Velveray Corp., Paterson, N. J.

James Lewis Jewell, 81, retired general manager of the former Saxon Mills, Spartanburg, S. C.

Walter E. LeRoy, retired district manager of Union Special Machine Co., Cincinnati, Ohio.

Luke A. Lutz, 72, retired treasurer and general manager of William G. Leininger Knitting Co., Reading, Pa.

Dr. Paul H. Margulies, 60, manager of the metals application section at the Chemical Research and Development center of Food Machinery and Chemical Corp., Princeton, N. J.

Edward L. Martin, 85, former president of H & B American Co., North Attleboro, Mass.

Alexander McKeown, 71, former general president of the American Federation of Hosiery Workers.

Francis J. Murdoch, Jr., 74, retired head of the dyeing department of Salisbury, (N. C.) Cotton Mill.

David Leland Norris, 81, retired president and treasurer of Norris Bros., Greenville, S. C.

John W. Reynolds, 74, retired superintendent of the Virginia Mfg. Co., Carrollton, Ga.

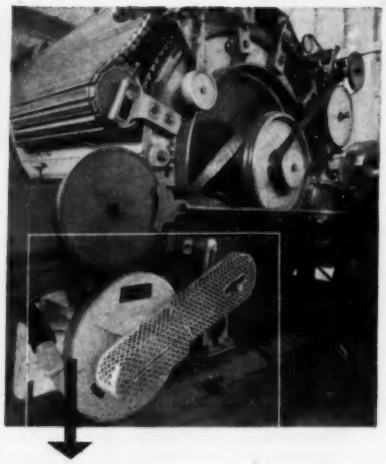
Professor Edward Robinson Schwarz, 62, world-renowned textile engineer and long-time head of textile technology at Massachusetts Institute of Technology.

J. L. Stricklin, 37, textile designing engineer for Swift Mfg. Co., Columbus, Ga.

Leon H. Tompkins, 60, purchasing agent for The William Carter Co., Needham Heights, Mass.

Andrew B. Walls, Jr., 77, retired vice-president in charge of woolen manufacturing for American Woolen Co., Boston, Mass.

Prof. Benjamin L. Whittier, a member of the faculty of the North Carolina State College School of Textiles, Raleigh, N. C.



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MILL NOTES

Apex Ribbon Co., Inc., a division of Federal Silk Mills, has announced the opening of a new dye house in Reading, Pa., to replace the Williamsport, Md., facility which was destroyed by fire.

The $10,000 expansion and remodeling program at **Walker Hosiery Mills, Inc.,** Hickory, N. C., has been completed. Production is expected to be increased one-third with the addition of approximately 28 new machines.

A new loop ager has been installed in the penthouse adjacent to the white room of the Ware Shoals (S. C.) division of **Riegel Textile Corp.** Utilized to develop vat colors and improve fastness of prints, the ager has the capacity for 320 yards of cloth double strand. A new mercerizer is operating in the finishing department.

Spurgeon Hosiery Corp., Lincolnton, N. C., has awarded a contract for the construction of a new building for its plant and offices. When the project is completed in early fall, all operations will be housed under one roof.

Textile Corp. of America has announced the completion of their plant near Madison, S. C. Paper knit fabrics for packaging are being manufactured.

Grenada (Miss.) Industries, Inc., has announced plans to expand its hosiery plant by an additional 25,000 sq ft of space.

J. P. Stevens & Co., Inc. has announced that looms are now being installed at the Roanoke Rapids, N. C., plant for the production of terry cloth. * * * The firm has purchased a stock interest in S. A. Pierre Genin & Cie, Villeurbanne (Rhone) France.

Herbert S. Howard has formed **Amerathane Industries, Inc.** Located in Brooklyn, N. Y., the new company will specialize in urethane foam lamination.

Southern Mills, Inc., Atlanta, Ga., has announced completion of a synthetics fabrics plant in Senoia, Ga. Managed by Clyde Lunsford, the new facility will produce SouLon (made of 100 per cent Dacron), Pyron H, Pyron C, Vanguard, nylon trade specialities of all types, and other synthetic fabrics.

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For further information use Handy Return Card, Page 173

The new knitwear plant of **Argo Mills,** a division of Atlas General Industries, Inc., New York City, is to be built in Sandersville, Ga. Henry W. Kisler will be in charge of the facility.

Springfield (Tenn.) Woolen Mills has completed installation of new dyeing and processing machinery. The company recently installed a waste disposal system at a cost of $60,000.

Harn Corp., Cleveland, Ohio, has leased the building now under construction in Sylva, N. C., for a knitwear plant. Completion is expected about the middle of October.

A new bleaching and finishing plant will be constructed at the Durham, N. C., plant of **Erwin Mills, Inc.**

Holt Hosiery Mills, Inc., Burlington, N. C., has announced plans to construct a larger finishing plant. The new facility will contain approximately 50,000 sq ft of floor space and a capacity to process more than 25,000 dozen pairs of women's hosiery weekly.

Robinson Mfg. Co., Oxford, Me., has announced the acquisition of **Kezar Falls (Me.) Woolen Mill.**

A women's hosiery finishing plant is being constructed in Burlington, N. C., by **Kayser-Roth Hosiery Co.** When the building is completed, the Webb Avenue plant will be occupied by the men's hosiery division.

American Mills, Griffin, Ga., has announced plans to open a new plant in Jackson, Ga. Approximately 200 persons will be employed in the manufacture of knit underwear for children. Carl Hill will be plant superintendent.

Burlington Industries, Inc. has acquired the assets of **Globe Mills Co.,** with plants at Mt. Holly and Lincolnton, N. C. The two yarn spinning plants will supplement Burlington's yarn producing operations as units of Burlington Yarn Co. No changes are contemplated in operating personnel. * * * Formation of a new company in Germany, to manufacture and sell fiberglass fabrics in the European common market, has been announced by Burlington. The firm, designated Interglas Textil, is a result of agreements reached with Steiger & Deschler, a German textile manufacturer, by Burlington International.

Marathon Knitting Mills, Reading, Pa., has been destroyed by fire.

Beaunit Mills, Inc. has announced plans to construct a multimillion dollar plant in Hamilton, N. C. The new facility will produce natural and synthetic circular knit fabrics for underwear, outerwear, and industrial uses. It is anticipated that production will begin by Jan., 1962.

Surfab, Inc., a division of Knit-Form Mills, Inc., is now located in a new 50,000 sq ft plant in Palmerton, Pa. Thirty additional knitting machines have been installed as well as three additional finishing units.

A new firm, **Hardwick (Vt.) Knitwear, Inc.,** has been formed by Roderic Montgomery.

A new compressive shrinkage machine has been installed in the finishing department of Union Bleachery, a division of **Cone Mills Corp.**

William Simpson Sons & Co., Inc. recently celebrated its 125th anniversary.

Samuel Hird & Sons, New York City, is in the process of liquidation.

Fairmont (N. C.) Knitting Mills, Inc., which has occupied the former Imperial Tobacco Co. building, is now producing men's knitted shirts.

A new corporation, **Durafoam Plastics, Inc.,** has been formed by Foamade Industries of Oak Park, Mich.

Stirewalt Hosiery Mill, Hickory, N. C., has installed 60 new conventional 400-needle machines in the recently completed addition.

The new plant of **Pexile Corp. of America,** located between Mayodan and Stoneville, N. C., has been completed. Pilot operations have begun. George W. Allfred has been named superintendent of operations, and Neal Lancaster is plant manager.

Standard Bleachery Co., Carlton Hill, N. J., has closed its plant and transferred processing operation to the plant of Millville (N. J.) Mfg. Co., under a consolidation of operations agreement between the two firms. The companies will retain their separate identities.

Maverick Mills has announced that a new 250,000 sq ft plant will be built in Greenville County, S. C.,

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MILL NOTES

(from page 181)

back-to-back with the White Horse Mill. The estimated cost of the building and equipment is $5 million. The facility will produce combed cotton sateens.

Samuel A. Hird has formed a new corporation under the name of **Samuel Hird & Co.**, which will conduct a top-making and dyeing business. The firm is located in the former plant of Eureka Printing Co., Clifton, N. J.

Whiting Hosiery Mills, Hickory, N. C., will move into a new 10,000 sq ft building at Ninth Ave. and 15th St., N. E. in October. New machines are being installed and additional personnel will be required in the expanded quarters.

A two-story, 42,000 sq ft office building is being constructed in LaGrange, Ga., by **Callaway Mills Co.**

Columbia Mills, Inc., Syracuse, N. Y., has purchased from **Athol (Mass.) Mfg. Co.** its pyroxylin embossing equipment, processes, and formulae used in the production of pyroxylin artificial leather and pyroxylin impregnated book cloth. The equipment has been transferred to the Minetto, N. Y., plant. The Athol firm has closed the Massachusetts operation and is producing vinyl coated fabrics at the Butner, N. C., plant.

LaFrance Industries, Inc. has established a $600 scholarship at Clemson (S. C.) College School of Textiles, and has granted its first award to Michael L. Lee, son of W. Z. Lee, who is employed by Pendleton Mfg. Co., a division of LaFrance.

A. & M. Karagheusian, Inc. has announced the addition of a new spinning and dyeing plant in Statesboro, Ga. The spinning and dyeing operations now housed at Roselle Park, as well as the dyeing facilities at Freehold, N. J., will be moved to the new plant. The Statesboro facility is expected to be completed by December, 1961, and the new division will be in full production operation by mid-1962. Edwin B. Bachman, now Freehold plant manager, will be plant manager at the Statesboro location, and H. Richard Carlson will be assistant.

Reeves Brothers, Inc., has announced that its Curon laminating plant in Garfield, N. C., has perfected a simplified process for post-treatment of laminated fabrics to make them slippery. This new treatment makes the laminated fabrics easier to sew. Called "Curon E-Z", this process is available on request from the Garfield plant.

Montezuma (Ga.) Knitting Mills, Inc., has been acquired by Flagg-Utica Corp. of New York, and will be operated as a wholly-owned subsidiary of the parent firm under the name of **Montezuma Knitting Corp.** (a Delaware corporation). R. C. Collier, Jr., has been named president of Montezuma Knitting Corp., and R. C. Collier, Sr., has been retained in an advisory and consultant capacity.

Whisnant Hosiery Mills, Hickory, N. C., has purchased the Komet equipment from the **O. E. Kearns and Son, Inc.**, plant at High Point, N. C., which is in the process of liquidation.

To celebrate the 25th anniversary of **Rockfish-Mebane Yarn Mills, Inc.**, Mebane, N. C., a subsidiary of Dixie Mercerizing Co., all employees were paid in silver dollars. A souvenir money pouch was given to each employee.

An addition to the existing chemical research facilities of **Deering Milliken Research Corp.** is under construction. An entirely new cotton processing and spinning research facility is also under construction.

Bates Manufacturing Company has announced a plan which will go into effect October 1 whereby participating key employees can purchase shares of the company's common stock at a price not less than 95 per cent of fair market value of the common stock on the date the option is granted.

"The Westpointer," employee publication of **West Point (Ga.) Mfg. Co.**, recently received a certificate of merit from the National Safety Council for " . . . presenting safety to employee readers." The publication is listed as one of the five best company magazines in the nation.

The **Ashe Hosiery Mills**, Knoxville, Tenn., has been liquidated.

The **Julia Manufacturing Co., Inc.**, Rock Hill, S. C., and organized by W. C. Stafford, is producing ladies' seamless hosiery. The new firm is located in the Dave Baer building.

SUPPLIER NOTES

Howard S. Gordon has been named manager of the Greensboro, N. C., office and warehouse of **The Torrington Co.** Assisting Mr. Gordon in the territory covered by the Greensboro office are George T. Stanley of Chattanooga, Tenn.; Howard E. Harris, Greensboro, N. C.; E. Paul Schwarze, Atlanta, Ga.

David A. Colker, director and technical consultant for **National Drying Machinery Co.**, has taken a leave of absence to reorganize The Chemical Packaging Company of Florida.

Star Paper Tube, Inc. recently moved into a new plant in Danville, Va.

The Crest Chemical Corp. has announced the appointment of Charles A. Tier as chief chemist of the textile and industrial laboratory facilities.

The **F. A. Young Machine Co., Inc.**, has announced the receipt of an order to install long staple, high-draft changeover on ten spinning frames for the Abbeville (S. C.) Mills. Also, the firm has received an order for installation of double apron, high-draft changeover on 80 frames for Martha Mills, Thomaston, Ga.

Frank B. Knight has been appointed vice-president and G. Edward Ammerman has been named general sales manager of **Chromalox, Inc.**, a subsidiary of Edwin L. Wiegand Co.

Contracts for more than a million dollars worth of computer equipment have been signed by the **Trust Company of Georgia** for use in their factoring department. The equipment is designed to keep records of credit extended and to actually make routine decisions on the extension of credit under certain limitations.

W. J. Fullerton has joined **Hartford Fibers Co.**, division of Bigelow-San-

ford, Inc., as assistant to C. Chester Bassett, Jr., vice-president of Bigelow-Sanford, Inc., in charge of the Hartford division. In his new post Mr. Fullerton will be in complete charge of all marketing, merchandising, sales promotion, and advertising activities for the firm's Zantrel Polynosic fiber.

Wm. Allen Harmon has joined the development engineering staff of **James Hunter, Inc.**

Koppers Company, Inc., and **Courtaulds, Ltd.,** have announced the completion of a first step in plans for the exploration of areas of mutual interest. This move represents an attempt to see how two companies, each having its principal base of operations in specific parts of the world and each operating principally in different product fields, can work together to their mutual advantage. * * * H. M. Gorton, Jr. has been appointed manager of the dyestuffs sales department for the Koppers Company, Inc. K. C. Ruppenthal has been named to succeed Mr. Gorton as eastern sales district manager.

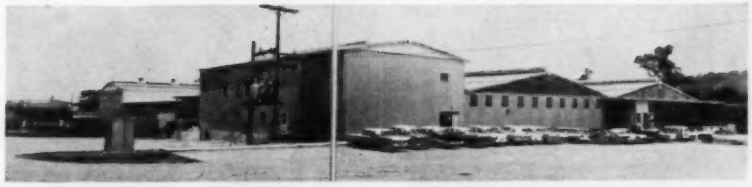
Anderson, Clayton & Co. has announced the formation of the domestic cotton sales division with headquarters in Greenville, S. C. Henry Stevens has been named manager. The division has sales offices located in Memphis, Tenn., Birmingham, Ala., Thomaston, Ga., Greensboro, N. C., and Greenville, S. C.

Parker H. Del Plain, southern manager of the textile chemicals department of **Rohm & Haas Co.,** has retired. W. A. Wardell has been named to succeed Mr. Del Plain.

Plans to expand nylon yarn capacity at the Greenwood, S. C., plant of **The Chemstrand Corp.,** have been announced. Completion of the facilities is scheduled for May, 1962.

Robert C. Hyatt has been appointed director of marketing for Antara Chemicals, a division of **General Aniline & Film Corp.**

Claude M. Banks has been named manager of repair parts and changeover sales in the south for **Whitin Machine Works.** Mr. Banks will work out of the Charlotte office. * * * The firm has announced that Bates Manufacturing Co. recently purchased 12 Model M6A Even-Draft drawing frames, 4-deliveries each, for their Edwards division in Augusta, Maine. Other orders received for new equipment are: The Kendall Co., Mollohon plant, Newberry, S. C., 14 high-speed, 2-delivery Model M7 Even-Draft drawing frames; Spartan Mills, Beaumont division, Spartanburg, S. C., 32 Model M7 2-delivery, high-speed Even-Draft drawing frames.



The new urethane foam producing and fabricating facility of **Nopco Chemical Co.,** (top photo) is located at Chattanooga, Tenn. The plant encompasses 70,000 sq ft and has the initial capacity of four million pounds annually. Fabricating (bottom left) can be arranged to provide foam blocks, slab, or sheets of virtually any dimensions. Foam line (bottom right) turns out a continuous slab of material similar in appearance to a loaf of bread.

Jason M. Salsbury has been appointed director of fibers research for the fibers division of **American Cyanamid Co.** Dr. Salsbury will supervise research on fibers in the company's research laboratories in Stamford, Conn. Richard J. Franz has been named to succeed Dr. Salsbury as manager of the technical department at the Santa Rosa plant.

Maynard D. Upper has been named industrial products manager of the middle Atlantic sales region for **Sun Oil Company.** Mr. Upper will maintain headquarters in Philadelphia.

Irving Fischer has been appointed manager of the newly expanded Mid-Atlantic division of **National Starch and Chemical Corp.,** succeeding the late Jack Snyder.

Shawinigan Resins Corp. will construct a $500,000 office building at the firm's headquarters in Springfield, Mass. Scheduled for completion in mid-1962, the two-story building will house executive offices and several staff departments.

Saco-Lowell Shops has announced receipt of an order for 16 spinning frames totaling 4,608 spindles from Russell Mfg. Co. The firm has also ordered one 96-spindle roving frame, and a one-process picker.

C. Venoy Boliek has been named manager of **Uster Corp.** Hans Winiger has been appointed sales manager of product sales. William B. Floyd has assumed duties as head of the expanded engineering department, and Jack Taylor has been named assistant to the manager. George C. Fryer has become advertising and sales promotion manager.

Michael P. De Leo has been named southern representative for **Shaffer**

Dixon Corp. has completed the transfer of the textile machinery division from Bristol, R. I., and Charlotte, N. C. to this new 25,000 sq ft plant in Monroe, N. C.

SUPPLIER NOTES

(from page 183)

& Max, Inc., and **Alliance Textile Machinery Corp.**

R. W. Breidenbach has joined **Turbo Machine Co.** as a sales engineer, covering mainly the southern hosiery mills and finishing plants.

Thomas W. Hardy has joined the sales staff of **Arnold, Hoffman & Co.** Mr. Hardy will service textile dyeing and finishing plants in the New England area.

Henry M. Brundage has been appointed manager of the Chattanooga district for **Allis-Chalmers Manufacturing Co.,** succeeding J. Warren Roberts, who has been transferred to the southeast region office in Atlanta, as regional representative for electrical transmission and distribution equipment. • • • The firm has named **Textile Sales & Service Co.,** Atlanta, Ga., as a distributor and agency for the industries group products for Georgia and that portion of South Carolina covered by Allis-Chalmers' Atlanta district office. R. J. Jennings is president of Textile Sales & Service Co.

Melbourne P. Binns has been named Atlanta regional manager of the Industrial Chemicals division of **Pensalt Chemicals Corp.**

John B. Cornwell, Jr., has been named director of technical sales service for the fiber division of **Reeves Bros., Inc.** Formerly plant manager of Reeves Plastics, Inc., Mr. Cornwell is headquartered in Spartanburg, S. C.

Corn Products Sales Co. has acquired patent rights to the Nemo Jet continuous cooker. Norman Elsas of Nemo Industries, Inc., originator of the continuous starch cooker, will be associated with the firm as a consultant.

Richard G. "Buck" Buchignani has been named southern regional representative for the industrial truck division of **Hyster Co.** Mr. Buchignani will be headquartered in Memphis, Tenn.

S. F. M. Maclaren has been appointed eastern sales manager of **Penick & Ford, Ltd.,** succeeding W. S. Russell, who has been promoted to assistant to the vice-president. L. S. Simser has been named western sales manager, replacing L. S. Poer, who has been elevated to vice-president and director of marketing. G. M. Anderson has assumed duties as southern sales manager, succeeding P. G. Wear, who will retire January 1, 1962. Dr. J. E. Killinger has been named vice-president of product application and development. Dr. R. E. Brouillard has been advanced to vice-president and director of marketing for the paper and textile industries. • • • Penick & Ford, Ltd., Inc., and **Morningstar-Paisley, Inc.,** have merged. The latter firm will operate as a division under existing management. The newly acquired business will offer the parent firm the opportunity to expand into new lines of operation, particularly into the potato starch and chemical fields.

Mr. Simser
Penick & Ford

Mr. Russell
Penick & Ford

Mr. Anderson
Penick & Ford

Mr. Poer
Penick & Ford

Mr. Maclaren
Penick & Ford

Mr. Elsas
Corn Products

Mr. Madden
Louis Batson

Mr. Cornwell
Reeves Bros.

Mr. Breidenbach
Turbo

Mr. Binns
Pennsalt

Mr. Buchignani
Hyster

Mr. Patton
Shell Chem.

Mr. Hardy
Arnold, Hoffman

Mr. Jennings
Textile Sales

Simser has been named western sales manager, replacing L. S. Poer, who has been elevated to vice-president and director of marketing. G. M. Anderson has assumed duties as southern sales manager, succeeding P. G. Wear, who will retire January 1, 1962. Dr. J. E. Killinger has been named vice-president of product application and development. Dr. R. E. Brouillard has been advanced to vice-president and director of marketing for the paper and textile industries. • • • Penick & Ford, Ltd., Inc., and **Morningstar-Paisley, Inc.,** have merged. The latter firm will operate as a division under existing management. The newly acquired business will offer the parent firm the opportunity to expand into new lines of operation, particularly into the potato starch and chemical fields.

Southern States, Inc. is the new name for Southern States Equipment Corp. of Hampton, Ga.

William Lewis Madden has joined **Louis P. Batson Co.** as sales representative for a portion of South Carolina and northeastern Georgia.

Work has begun on hydrogen peroxide bulk storage facilities near Charlotte, N. C., which will enable **Shell Chemical Company** to provide faster tank truck service to the industries in the southeastern states. • • • Edward L. Patton has joined the textile chemical staff of the firm. Mr. Patton will be headquartered in Charlotte, N. C.

Jenkins Metal Shops, Inc. has announced the acquisition of **Gastonia Clearer Cot Co.,** which will be operated as a division of the parent firm. The division will continue the manufacture of clearers along with many other wooden textile supplies.

Grads

(from page 134)

James A. Harris
American Enka Corp.
Kenneth L. Hawn
Allied Chemical Corp.
Charles E. Huffstetler
Tennessee Eastman Corp.
Max M. Huntley
Cramerton Mills
Donald E. Inge
J. P. Stevens & Co., Inc.
Gene E. Inman
Fieldcrest Mills
Philip N. Jacobs
Geigy Dyestuffs
Allen N. James
Military
Steve C. James
Mooresville Mills
Gerald L. Johnson
Military
Rives B. Kimrey
Chatham Mfg. Co.
Mariano T. Lim
Atlas Textile Development Corp.
Thomas C. Lind
Pacific Mills
Donald C. Livingston
Graduate work, N. C. State
Charles D. McMahon
Kingstree Mfg. Co.
Harold R. Mann
Delta Finishing Co.
Ronald R. Medders
Dan River Mills
Max B. Merritt
Cascade Weaving
Wm. O. Morrison
Military
S. Munneyyirci
John L. Nash
Mooresville Mills
Robert M. Neely
David R. Nelson
Military
John F. Nixon
Cramerton Mills
Larry S. O'Connell
J. P. Stevens & Co., Inc.
Richard D. Parks
Burlington Industries, Inc.
Bobby A. Perry
National Spinning Mills
Earl J. Phillips
Cramerton Mills
Ashley J. Pierson
Burlington Industries, Inc.
Carlos Platschek
United Merchants & Mfgrs.
Wm. K. Poole
Celanese Corp. of America
Wm. D. Randall
Cannon Mills Co.
Lanny R. Rayfield
Textiles, Inc.
Eugene C. Rickell
J. P. Stevens & Co., Inc.
Farrera J. Rivadeneyra
Donald C. Roberts
Dan River Mills
Herbert G. Rosenthal
Military
David G. Rowe, III
Military
Silas M. Rowland
J. P. Stevens & Co., Inc.
Charles J. Russell
Russell Hosiery Mills
James M. Seago
Clarksville Finishing Co.
Mitchell W. Sellers
Military
Spencer N. Shaps
Iselin Jefferson, Inc.
John R. Sherrill, Jr.
Military
Lawrence A. Silver
Lofties Knitting Mills
Fred N. Slosman
Slosman Corp.
Iverson R. Smith
J. P. Stevens & Co., Inc.
Wm. F. Stanley
E. I. du Pont de Nemours & Co., Inc.
John F. Stevens
Deering Milliken Research Corp.
Lindell G. Stoker
Cannon Mills Co.
Glen B. Talbert
Collins & Aikman Corp.
Larry H. Taylor
Clinchfield Mfg. Co.
Worth B. Thomasson
Dan River Mills
Donald R. Tickle
Cone Mills Corp.
Leonard K. Tillman
Military
Frederick E. Wilson
Graduate work, N. C. State
Owen D. Wright
Pacific Mills
Larry M. Yow
Pacific Mills

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Richard Benson
Undecided
Samuel Burtman
Singer Fidelity
Aral Demirtas
Undecided
Bulent Ertugrul
Undecided
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American Cyanamid Co.
Aaron Gerber
Joan Fabric
Arthur Goldberg
Collins & Aikman Corp.
Eliahu Grinstein
Temple University
Kulinkant Kenia
Undecided
Nari R. Khiani
Undecided
Philip N. Lazar
Glasgo, Limited
Stasia M. Mallast
Phila. College of Textiles and Science
David Manevich
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Undecided
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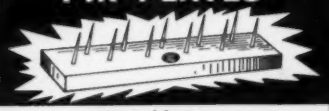

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